

APPENDIX A.4

Fish Species of Conservation Priority Accounts

Chestnut Lamprey	328
Silver Lamprey	331
Pallid Sturgeon	334
Paddlefish.....	337
Central Stoneroller	340
Sturgeon Chub	343
Sicklefin Chub	346
Silver Chub.....	349
Pearl Dace.....	352
Hornyhead Chub	355
Pugnose Shiner.....	358
Blacknose Shiner	361
Rosyface Shiner	364
Northern Redbelly Dace.....	367
Finescale Dace	370
Flathead Chub.....	373
Blue Sucker	376
Yellow Bullhead.....	379
Flathead Catfish	382
Trout-perch.....	384
Logperch	387
River Darter	390

Chestnut Lamprey

Level III

Scientific Name: *Ichthyomyzon castaneus*

General Description: Eel-like in body shape, up to 15 inches in length. Tan on top with a white belly, no scales. One continuous fin on back and belly. No paired fins on the sides or belly. Mouth is a suction cup like disc with teeth in a circular pattern. Parasitic, maybe found attached to another fish.

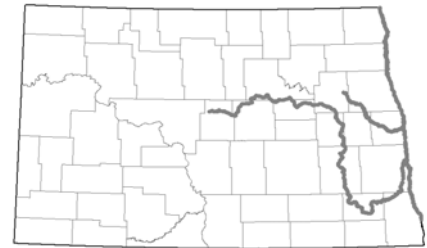
Status: Year-round resident.

Abundance: Rare.

Primary Habitat: Found in streams and rivers. Young spend first part of life in pools and backwater with a silt bottom.

Federal Status: None.

Reason for Designation: Little is known of this species within the state. It may be at the western edge of its range in North Dakota. Only a couple of records for the state exist.



LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Adults are found in larger river systems and lakes. Spawning occurs in smaller streams. Young (ammocoetes) will stay buried at the bottom for that stage of their life.

Key Areas for Chestnut Lamprey in North Dakota

The only records of this species in North Dakota come from the Red, Goose, and Sheyenne rivers. No specific sites have been identified for this species.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

Degradation of quality habitat is recognized as the leading cause for decline in this species. Specifically loss and destruction of headwater stream habitat caused by poor agriculture and grazing practices. Siltation is a threat to ammocoetes in upper stretches of streams.

Other Natural or Manmade Factors

The addition of dams to the Red River and its tributaries has changed the flow regime and blocks movement of fish, segmenting populations.

A decrease in water quality due to a number of poor land use practices in the Red River basin may contributed to the decline of this species.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- Currently there are no on going studies or surveys specifically targeting chestnut lamprey.

Previous Research and Survey Efforts

- Red River streams were surveyed during the 1960s by the University of North Dakota (UND).
- Surveys of several tributaries to the Red River in Minnesota were conducted by the BMNH from 1974-1976.

Chestnut Lamprey

Level III

- In the late 1970s, Red River tributaries surveys were conducted by the Minnesota Department of Natural Resources, Ecological Services Section (MDNR ECO).
- A survey was conducted on the Red River during 1983 and 1984.
- Investigations of stream fishes in the Red River basin occurred during 1993 and 1994 as a part of two major studies.
- Several sites throughout the basin have been sampled for fishes using electro-fishing gear by the MDNR, Minnesota Pollution Control Agency (MPCA), North Dakota Department of Health (NDDH), U.S. Environmental Protection Agency (EPA), and the U.S. Geological Survey (USGS). These studies are a part of the USGS National Water Quality Assessment program (Stoner et al. 1993) and the development of an index of biotic integrity for fishes in the basin (Goldstein et al. 1994).

Additional Research and Survey Efforts Needed

- Conduct a review of historic literature and data collection efforts for all fish species of conservation priority.
- Re-examine sites where this species has been recorded.
- Develop a protocol to monitor this species.

MANAGEMENT RECOMMENDATIONS

- Protect rivers, streams, and riparian areas where possible (i.e. easements and/or acquisition).
- Work with partners to ensure Swampbuster provisions are maintained.
- Continue to use the Section 404 program to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with other federal agencies (i.e. FAA and FHWA) not covered by Section 404 or Swampbuster to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with NDSWC to develop minimum in-stream flow recommendations.
- Work with partners to implement easements (i.e. EWP, WRP, and ACOE Sluffing or Flood Control Easements).
- Develop and promote incentive programs to restore riparian areas
- Work with partners to implement easements (i.e. EWP and WRP).
- Work with partners to implement easements
- Work with county zoning planning officials to designate areas in need of protective covenants
- Develop and promote incentive programs to enhance or restore riparian areas.
- Continue to work with ND 319 Task Force in prioritizing projects within impaired watersheds and implementing BMP's.
- Work to modify dam operation regimes.
- Develop and promote incentive programs for adjacent landowners to improve bank stability through land use changes (e.g. RRBPR)
- Promote non-traditional bank stabilization measures (i.e. root wads, willow waddles, vegetative slope)
- Implement intake conditions or recommendations (i.e. screening and velocity requirements)
- Work with the dam owners for potential removal or modification.
- Control noxious weeds through biological and chemical methods.
- Cooperate with Fisheries Division on state aquatic nuisance species plan.
- Survey areas of data gaps. Conduct research/surveys to establish baseline information on SoCP.
- Continue to work with partners in promoting and distributing educational materials related to river, stream and riparian values and good stewardship.

MONITORING PLANS

- No monitoring plan has been identified for this species.
- Ongoing surveys, along with the North Dakota Game and Fish Department's incidental reporting system could be used to monitor this species.

Chestnut Lamprey

Level III

- The North Dakota Department of Health will begin conducting Index of Biotic Integrity (IBI) surveys in the summer of 2005 for all of North Dakota's watersheds. This will document all species encountered.

REFERENCES

- Becker, G. C. 1983. Fishes of Wisconsin. Univ. Wisconsin Press, Madison. 1052 pp.
- Goldstein, R.M. et al. 1994. Concepts for an Index of Biotic Integrity for Streams of the Red River of the North Basin: Proceedings of the North Dakota Water Quality Symposium, March 30-31, 1994. Fargo, North Dakota, pp. 169-180.
- Kelsh, S.W., J. Alm, J. Tesky. 2001. The Distribution of North Dakota Fishes. Unpublished. North Dakota Game and Fish. 19 pp.
- Koel, Todd Marvin. 1997. Distribution of Fishes in the Red River of the North Basin on Multivariate Environmental Gradients. Ph.D. thesis, North Dakota State University, Fargo, North Dakota. 275 pp.
- Page, L. M., and B. M. Burr. 1991. A field guide to freshwater fishes: North America north of Mexico. Houghton Mifflin Company, Boston, Massachusetts. 432 pp.
- Peterka, John J. and Todd M. Koel. 1996. Distribution and dispersal of fishes in the Red River basin. Report submitted to Interbasin Biota Transfer Studies Program, Water Resources Research Institute, Fargo, ND. Northern Prairie Wildlife Research Center Home Page.
<http://www.npwrc.usgs.gov/resource/distr/others/fishred/fishred.htm> (Version 29AUG97).
- Power, Greg J. and F. Ryckman. 1998. Status of North Dakota's Fishes. ND Game and Fish Dept., Div. Rpt. 27, 20 pp.
- Stoner et al. 1993. Red River of the North Basin, Minnesota, North Dakota, and South Dakota: Water Resource Bulletin. v. 29, pp. 575-615.

Silver Lamprey

Level III

Scientific Name: *Ichthyomyzon unicuspis*

General Description: Eel-like in body shape up to 15 inches in length. Body is tan on top with a white belly. It has no scales. One continuous fin on its back and belly. No paired fins on the sides or belly. Mouth is a suction cup-like disc with teeth arranged in a circular pattern. Parasitic, may be found attached to another fish.

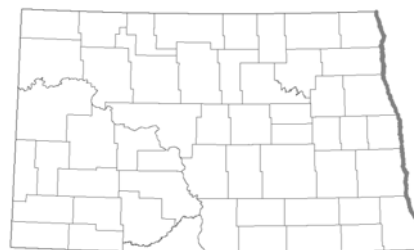


Konrad Schmidt

Status Unknown.

Abundance: Rare.

Primary Habitat: Found mainly in streams and rivers. Young spend first part of their life in pools and backwater areas with a silt bottom.



Federal Status: None.

Reason for Designation: Little is known of this species within the state. Presence recorded from only a couple of records in the Red River.

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Adults are found in larger river systems and lakes. Spawning occurs in smaller streams. Young or ammocoetes will stay buried at the bottom for that stage of their life.

Key Areas for Silver Lamprey in North Dakota

The only records of this species in North Dakota come from the Red River. No specific sites have been identified for this species.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

- Degradation of quality habitat is recognized as a leading cause for fish declines in the Red River drainage, specifically, loss and destruction of headwater stream habitat caused by poor agriculture and grazing practices.
- Siltation is a threat to ammocoetes in upper stretches of streams.

Other Natural or Manmade Factors

- The addition of dams to Red River tributaries has changed the flow regime and blocked fish movement throughout the system.
- A decrease in water quality due to poor land use practices in the Red River basin may contribute to the decline of this species.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- There are currently no studies or surveys specifically targeting the silver lamprey.

Previous Research and Survey Efforts

- Red River tributaries were surveyed during the 1960s by the University of North Dakota (UND).

Silver Lamprey

Level III

- Surveys of several tributaries to the Red River in Minnesota were conducted by the Bell Museum of Natural History from 1974-1976.
- In the late 1970s, Red River tributary surveys were conducted by the Minnesota Department of Natural Resources, Ecological Services Section (MDNR ECO). A similar study was conducted on the Red River during 1983 and 1984.
- In 1985, the North Dakota Natural Heritage Inventory and the NDGF sampled fishes from 15 sites in the Pembina River watershed.
- Investigations of stream fishes in the Red River basin occurred during 1993 and 1994 as a part of two major studies.
- Several sites throughout the basin have been sampled for fishes using electro-fishing gear by the MDNR, Minnesota Pollution Control Agency (MPCA), North Dakota Department of Health (NDDH), U.S. Environmental Protection Agency (EPA), and the U.S. Geological Survey (USGS). These studies are a part of the USGS National Water Quality Assessment program and the development of an index of biotic integrity for fishes in the basin.

Additional Research and Survey Efforts Needed

- Conduct a review of historic literature and data collection efforts for all species of conservation priority.
- Re-examine sites where this species has been recorded.
- Develop a protocol to monitor this species.

MANAGEMENT RECOMMENDATIONS

- Protect rivers, streams, and riparian areas where possible (i.e. easements and/or acquisition).
- Work with partners to ensure Swampbuster provisions are maintained.
- Continue to use the Section 404 program to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with other federal agencies (i.e. FAA and FHWA) not covered by Section 404 or Swampbuster to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with NDSWC to develop minimum in-stream flow recommendations.
- Work with partners to implement easements (i.e. EWP, WRP, and ACOE Sluffing or Flood Control Easements).
- Develop and promote incentive programs to restore riparian areas
- Work with partners to implement easements (i.e. EWP and WRP).
- Work with partners to implement easements.
- Work with county zoning planning officials to designate areas in need of protective covenants
- Develop and promote incentive programs to enhance or restore riparian areas.
- Continue to work with ND 319 Task Force in prioritizing projects within impaired watersheds and implementing BMP's.
- Work to modify dam operation regimes.
- Develop and promote incentive programs for adjacent landowners to improve bank stability through land use changes (e.g. RRBPR).
- Promote non-traditional bank stabilization measures (i.e. root wads, willow waddles, vegetative slope).
- Implement intake conditions or recommendations (i.e. screening and velocity requirements).
- Work with the dam owners for potential removal or modification.
- Control noxious weeds through biological and chemical methods.
- Cooperate with Fisheries Division on state aquatic nuisance species plan.
- Survey areas of data gaps. Conduct research/surveys to establish baseline information on SoCP.
- Continue to work with partners in promoting and distributing educational materials related to river, stream and riparian values and good stewardship.

Silver Lamprey

Level III

MONITORING PLANS

- No monitoring plan has been identified for this species.
- Ongoing surveys, along with the North Dakota Game and Fish Department's incidental reporting system could be used to monitor this species.
- The North Dakota Department of Health will begin conducting Index of Biotic Integrity (IBI) surveys in the summer of 2005 for all North Dakota watersheds. This will document all species encountered.

REFERENCES

- Goldstein, R.M. et al. 1994. Concepts for an Index of Biotic Integrity for Streams of the Red River of the North Basin: Proceedings of the North Dakota Water Quality Symposium, March 30-31, 1994. Fargo, North Dakota, pp. 169-180.
- Kelsh, S.W., J. Alm, J. Tesky. 2001. The Distribution of North Dakota Fishes. Unpublished. North Dakota Game and Fish. 19 pp.
- Koel, Todd Marvin. 1997. Distribution of fishes in the Red River of the North Basin on Multivariate environmental gradients. Ph.D. thesis, North Dakota State University, Fargo, North Dakota. 275 pp.
- Page, L. M., and B. M. Burr. 1991. A Field Guide to Freshwater Fishes: North America north of Mexico. Houghton Mifflin Company, Boston, Massachusetts. 432 pp.
- Peterka, John J. and Todd M. Koel. 1996. Distribution and Dispersal of Fishes in the Red River Basin. Report submitted to Interbasin Biota Transfer Studies Program, Water Resources Research Institute, Fargo, ND. Northern Prairie Wildlife Research Center Home Page.
<http://www.npwrc.usgs.gov/resource/distr/others/fishred/fishred.htm> (Version 29AUG97).
- Power, Greg J. and F. Ryckman. 1998. Status of North Dakota's Fishes. ND Game and Fish Dept., Div. Rpt. 27, 20 pp.
- Stoner et al. 1993. Red River of the North Basin, Minnesota, North Dakota, and South Dakota: Water Resource Bulletin. v. 29, pp. 575-615.

Pallid Sturgeon

Level II

Scientific Name: *Scaphirhynchus albus*

General Description: Grows up to seven feet in length. Light gray in color with a lighter underside. Small black eyes set on a large shovel-shaped head. Four barbels on the underside of the head with the two inner barbels shorter than the outer two. This distinguishes it from the more common shovelnose sturgeon. The top side of its body is covered in large scales called scutes.

Status: Year-round resident.

Abundance: Rare.

Primary Habitat: Only found in the Missouri River and parts of the Yellowstone River. Usually in fast current areas with a firm sand or gravel bottom.

Federal Status: Endangered.

Reason for Designation: Loss of river habitat due to channelization and impoundment has caused declines in this species within the state and range wide. Dams have also separated populations.



USFWS



LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Pallid sturgeon are well adapted for life on the bottom of a fast flowing, turbid river. Generally found in stretches of river with 40 to 90 cubic feet per second velocity. Areas at the end of chutes or sandbars are commonly used, most likely for energy conservation and feeding. The range of depths used vary seasonally, with most fish being found shallow in the spring and deeper in the fall.

Key Areas for Pallid Sturgeon in North Dakota

Pallid sturgeon are most commonly found in the upper Missouri River upstream of Lake Sakakawea, and in the Yellowstone River near the confluence of the two rivers.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

Destruction and alteration of habitats by human modification of the river system is likely the primary cause of declines in reproduction, growth, and survival of pallid sturgeon (USFWS 1993). Much of the species' habitat was destroyed when a number of large dams were constructed on the Missouri River, producing a number of large reservoirs. These structures changed the velocity, volume and timing of flows in the river from pre-impoundment.

In the system much of the remaining river has been channelized. This has changed the velocity, reduced the width of the river, and prevented water flow into backwater areas important to this species (USFWS 1993).

Other Natural or Manmade Factors

The ACOE manages water releases from impoundments in the Missouri River System. Flows are generally reduced in the spring and then increased later in the summer. This is the opposite of pre-

Pallid Sturgeon

Level II

impoundment when high flows were common in spring and then decreased throughout the year. This has impacted reproduction, larval fish rearing, and food supplies (USFWS 1993).

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- Currently the USFWS tracks a number of fish with radio transmitters. Habitat use, seasonal movement and other information is obtained.
- Captive breeding and rearing of pallid sturgeon at Garrison Dam National Fish Hatchery.

Previous Research and Survey Efforts

- A status review and recovery plan has been conducted by the USFWS.

Additional Research and Survey Efforts Needed

- Protect and restore pallid sturgeon populations, individuals and their habitats.
- Conduct research necessary for the survival and recovery of pallid sturgeon.
- Specific actions and studies are documented in the pallid sturgeon recovery plan.

MANAGEMENT RECOMMENDATIONS

- Species specific recommendations are outlined in the USFWS Recovery Plan.
http://ecos.fws.gov/docs/recovery_plans/1993/931107.pdf
- Protect rivers, streams, and riparian areas where possible (i.e. easements and/or acquisition).
- Work with partners to ensure Swampbuster provisions are maintained.
- Continue to use the Section 404 program to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with other federal agencies (i.e. FAA and FHWA) not covered by Section 404 or Swampbuster to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with NDSWC to develop minimum in-stream flow recommendations.
- Work with partners to implement easements (i.e. EWP, WRP, and ACOE Sluffing or Flood Control Easements).
- Develop and promote incentive programs to restore riparian areas.
- Work with partners to implement easements (i.e. EWP and WRP).
- Work with partners to implement easements.
- Work with county zoning planning officials to designate areas in need of protective covenants.
- Develop and promote incentive programs to enhance or restore riparian areas.
- Continue to work with ND 319 Task Force in prioritizing projects within impaired watersheds and implementing BMP's.
- Work to modify dam operation regimes.
- Develop and promote incentive programs for adjacent landowners to improve bank stability through land use changes (e.g. RRBPR).
- Promote non-traditional bank stabilization measures (i.e. root wads, willow waddles, vegetative slope).
- Implement intake conditions or recommendations (i.e. screening and velocity requirements).
- Work with the dam owners for potential removal or modification.
- Control noxious weeds through biological and chemical methods.
- Cooperate with Fisheries Division on state aquatic nuisance species plan.
- Survey areas of data gaps. Conduct research/surveys to establish baseline information on SoCP.
- Continue to work with partners in promoting and distributing educational materials related to river, stream and riparian values and good stewardship.

Pallid Sturgeon

Level II

MONITORING PLANS

- USFWS, USGS, and Montana FWP conduct population surveys of the pallid sturgeon in the Yellowstone River and Williston reach of the Missouri River.

REFERENCES

Page, L. M., and B. M. Burr. 1991. A Field Guide to Freshwater Fishes: North America north of Mexico. Houghton Mifflin Company, Boston, Massachusetts. 432 pp.

NatureServe Explorer, an online encyclopedia of life. 7/26/2004. <http://www.natureserve.org/explorer/>

U.S. Fish and Wildlife Service. 1993. Pallid Sturgeon Recovery Plan. U.S. Fish and Wildlife Service, Bismarck, North Dakota. 55 pp.

Paddlefish

Level II

Scientific Name: *Polyodon spathula*

General Description: Can grow 7 feet in length and can weigh over 100 pounds. Large paddle-shaped snout. Smooth skin has no scales. Color ranges from blue-gray to nearly black with a lighter underside. Long fleshy gill covers.

Status: Year-round resident.

Abundance: Locally common.

Primary Habitat: Large river species.

Federal Status: No federal status.

Reason for Designation: Loss of river habitat due to channelization and impoundment has caused declines in this species within the state and range wide.



Craig Bihrie



LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

In summer months, slack water areas of a river are a preferred habitat for paddlefish. If this is not available, areas of low flow are sought such as behind sandbars, wing dams, or other structures. In winter paddlefish move into the deeper water of Lake Sakakawea. Paddlefish spawn in the spring and lay their eggs over silt-free gravel beds.

Key Areas for Paddlefish in North Dakota

The two most important areas for paddlefish in North Dakota are the Missouri River from upper Lake Sakakawea to the Montana border, and the Yellowstone River. These two river stretches are used by the paddlefish as migration routes to their spawning areas.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

Impoundments along the Missouri River System have changed the flow regime of the river and cover needed for spawning habitat. Slower flows have allowed silt to cover important gravel beds, making them unusable by spawning fish. As a result, reproduction only occurs in the wild when conditions are favorable in the Yellowstone River. Dams have also impeded the movement of fish throughout the system, separating populations. This brings up concerns about genetic integrity.

Other Natural or Manmade Factors

Over-harvest for the fishes' valuable roe is a concern for this species. The North Dakota Game and Fish Department regulates a controlled harvest for paddlefish as a sport fish. Water withdrawal or diversion for irrigation from the Yellowstone River is a growing concern.

Paddlefish

Level II

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- Currently populations within the Missouri River system are being monitored by use of information obtained from harvested fish and tagging studies. Age, growth rates, and sexual structure of the population are being documented.
- A telemetry study documenting season movements has been conducted by the University of Idaho and is being continued through the USFWS and USGS.
- Young-of-the-year surveys are conducted annually on the upper end of Lake Sakakawea.

Previous Research and Survey Efforts

- A Habitat Suitability Index (HSI) was developed for the paddlefish by the US Fish and Wildlife Service in 1984 and again in 1987.
- A study of the predation of walleye and sauger on young paddlefish was conducted in 1994 and 2002.
- The use of visual observations for estimating relative abundance was tested in 1997.

Additional Research and Survey Efforts Needed

- No additional research and survey efforts have been identified.

MANAGEMENT RECOMMENDATIONS

- Protect rivers, streams, and riparian areas where possible (i.e. easements and/or acquisition).
- Work with partners to ensure Swampbuster provisions are maintained.
- Continue to use the Section 404 program to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with other federal agencies (i.e. FAA and FHWA) not covered by Section 404 or Swampbuster to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with NDSWC to develop minimum in-stream flow recommendations.
- Work with partners to implement easements (i.e. EWP, WRP, and ACOE Sluffing or Flood Control Easements).
- Develop and promote incentive programs to restore riparian areas.
- Work with partners to implement easements (i.e. EWP and WRP).
- Work with partners to implement easements.
- Work with county zoning planning officials to designate areas in need of protective covenants.
- Develop and promote incentive programs to enhance or restore riparian areas.
- Continue to work with ND 319 Task Force in prioritizing projects within impaired watersheds and implementing BMP's.
- Work to modify dam operation regimes.
- Develop and promote incentive programs for adjacent landowners to improve bank stability through land use changes (e.g. RRBPR).
- Promote non-traditional bank stabilization measures (i.e. root wads, willow waddles, vegetative slope).
- Implement intake conditions or recommendations (i.e. screening and velocity requirements).
- Work with the dam owners for potential removal or modification.
- Control noxious weeds through biological and chemical methods.
- Cooperate with Fisheries Division on state aquatic nuisance species plan.
- Survey areas of data gaps. Conduct research/surveys to establish baseline information on SoCP.
- Continue to work with partners in promoting and distributing educational materials related to river, stream and riparian values and good stewardship.

Paddlefish

Level II

MONITORING PLANS

- The NDGFD will continue to use data from current survey efforts to monitor populations.

REFERENCES

- Crance, J. H. 1987. Habitat suitability index curves for paddlefish, developed by the Delphi technique. *North American Journal of Fisheries Management* 7:123-130.
- Firehammer, J., D. Scarnecchia and F. Ryckman. 2001. Paddlefish Left and Right. *North Dakota Outdoors*. 64(1):4-6.
- Fredericks, J. P., and D. L. Scarnecchia. 1997. Use of Surface Visual Counts for Estimating Relative Abundance of age-0 Paddlefish in Lake Sakakawea. *North American Journal of Fisheries Management* 17:1014-1018.
- Mero, S. W., D. W. Willis, and G. J. Power. 1994. Walleye and sauger predation on paddlefish in Lake Sakakawea, North Dakota. *North American Journal of Fisheries Management* 14:226-227.
- NatureServe Explorer, an online encyclopedia of life. 7/26/2004. <http://www.natureserve.org/explorer/>
- Page, L.M., B.M. Burr, 1991. *A Field Guide to Freshwater Fishes: North America north of Mexico*. New York: Houghton Mifflin Company. 104 pp.
- Parken, C. and D.L. Scarnecchia 2002. Predation on age-0 paddlefish by piscivorous fishes in a Great Plains reservoir. *North American Journal of Fisheries Management*. 22:750-759.
- Robinson, J. W. 1967. Observations on the life history, movement and harvest of the paddlefish, POLYODON SPATHULA, in Montana. *Proc. Montana Acad. Sci.* 26: 33-44.
- Scarnecchia, D.L. 1994. Life history and ecology of paddlefish in Lake Sakakawea, ND. Game and Fish Dept. Project F-2-R-40 Study R1. North Dakota Game and Fish Department.
- Scarnecchia, D. and F. Ryckman. 1998. Tagging young paddlefish for the twenty-first century. *North Dakota Outdoors*. 60(10):7-9.
- Scarnecchia, D. and F. Ryckman. 1995. Unlocking the secrets of Lake Sakakawea's young paddlefish. *North Dakota Outdoors*. 57(9):10-13.
- Scarnecchia, D.L., F. Ryckman, and J. Lee. 1997. Capturing and tagging of young-of-the-year and yearling paddlefish in a Great Plains reservoir. *North American Journal of Fisheries Management*. 17:800-802.
- Scarnecchia, D.L., P.A. Stewart, and F. Ryckman. 1995. Management Plan for the paddlefish stocks in the Yellowstone River, Upper Missouri River, and Lake Sakakawea. North Dakota Game and Fish Department and Montana Department of Fish, Wildlife and Parks. Bismarck and Helena.
- Scarnecchia, D.L., P.A. Stewart, and G.J. Power. 1996. Age Structure of the Yellowstone-Sakakawea Paddlefish Stock 1963-1993, in relation to reservoir history. *Transactions of the American Fisheries Society* 125:291-299.
- Sparrowe, R. D. 1986. Threats to paddlefish habitat. Pages 36-45 in J. G. Dillard, L. K. Graham, and T. R. Russell, editors. *The Paddlefish: Status, Management and Propagation*, North Central Division, American Fisheries Society, Special Publication Number 7.
- United States Geological Survey. Paddlefish study project. August 31, 2001.

Central Stoneroller

Level III

Scientific Name: *Campostoma anomalum*

General Description: Member of the minnow family, grows to a length of 8 inches. Body arched behind nape. Complete lateral line. Breeding males have small bumps along top of head and back called tubercles. Black bands present on orange dorsal and anal fins.



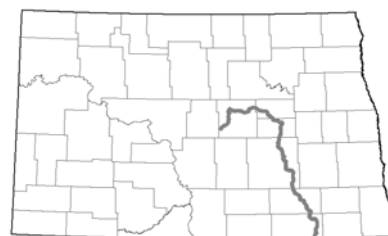
Status: Possibly extirpated.

Abundance: Very rare, if present.

Primary Habitat: Found in pools, and riffles of small, clear streams with gravel or rubble bottoms.

Federal Status: No federal status.

Reason for Designation: Little is known of this species. It was historically very rare in the state and it is unclear whether it is still present in the state's waters.



LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Found in pools and riffles of small, clear streams with gravel or rubble bottoms.

Key Areas for Central Stoneroller in North Dakota

The central stoneroller has only been documented in the James River, but not in the last 100 years. No other state waters are known to hold the central stoneroller.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

Degradation of quality habitat is recognized as the leading cause for the decline of this species, specifically the loss and destruction of riparian habitat along waterways caused by agricultural practices and grazing.

Other Natural or Manmade Factors

A decrease in water quality due to a number of land use practices in the James River basin may have and the addition of dams to the basin has changed the flow regime and blocked movement of this species, possibly contributing to its decline.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- Currently, there are no studies or surveys in progress specifically targeting the central stoneroller are on going.

Previous Research and Survey Efforts

- None have been identified.

Additional Research and Survey Efforts Needed

- Continue survey efforts to determine whether this species is present in the state.

Central Stoneroller

Level III

- Review historic literature and data collection efforts.
- Development a protocol to monitor this species.

MANAGEMENT RECOMMENDATIONS

- Protect rivers, streams, and riparian areas where possible (i.e. easements and/or acquisition).
- Work with partners to ensure Swampbuster provisions are maintained.
- Continue to use the Section 404 program to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with other federal agencies (i.e. FAA and FHWA) not covered by Section 404 or Swampbuster to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with NDSWC to develop minimum in-stream flow recommendations.
- Work with partners to implement easements (i.e. EWP, WRP, and ACOE Sluffing or Flood Control Easements).
- Develop and promote incentive programs to restore riparian areas.
- Work with partners to implement easements (i.e. EWP and WRP).
- Work with partners to implement easements.
- Work with county zoning planning officials to designate areas in need of protective covenants
- Develop and promote incentive programs to enhance or restore riparian areas.
- Continue to work with ND 319 Task Force in prioritizing projects within impaired watersheds and implementing BMP's.
- Work to modify dam operation regimes.
- Develop and promote incentive programs for adjacent landowners to improve bank stability through land use changes (e.g. RRBRP).
- Promote non-traditional bank stabilization measures (i.e. root wads, willow waddles, vegetative slope).
- Implement intake conditions or recommendations (i.e. screening and velocity requirements).
- Work with the dam owners for potential removal or modification.
- Control noxious weeds through biological and chemical methods.
- Cooperate with Fisheries Division on state aquatic nuisance species plan.
- Survey areas of data gaps. Conduct research/surveys to establish baseline information on SoCP.
- Continue to work with partners in promoting and distributing educational materials related to river, stream and riparian values and good stewardship.

MONITORING PLANS

- No monitoring plan has been identified for this species.
- On-going surveys along with the NDGFD's incidental reporting system could be used to monitor this species.
- The NDDoH will begin conducting Index of Biotic Integrity (IBI) surveys in the summer of 2005 for all of North Dakota's watersheds which will document all species encountered.

REFERENCES

- Koel, Todd Marvin. 1997. Distribution of fishes in the Red River of the North Basin on Multivariate environmental gradients. Ph.D. thesis, North Dakota State University, Fargo, North Dakota. 275 pp.
- Page, L. M., and B. M. Burr. 1991. A Field Guide to Freshwater Fishes: North America north of Mexico. Houghton Mifflin Company, Boston, Massachusetts. 432 pp.
- Peterka, John J. and Todd M. Koel. 1996. Distribution and Dispersal of Fishes in the Red River Basin. Report submitted to Interbasin Biota Transfer Studies Program, Water Resources Research Institute, Fargo, ND. Northern Prairie Wildlife Research Center Home Page.
<http://www.npwrc.usgs.gov/resource/distr/others/fishred/fishred.htm> (Version 29AUG97).

Central Stoneroller

Level III

Power, Greg J. and F. Ryckman. 1998. Status of North Dakota's Fishes. ND Game and Fish Dept., Div. Rpt. 27, 20 pp.

Sturgeon Chub

Level I

Scientific Name: *Macrhybopsis gelida*

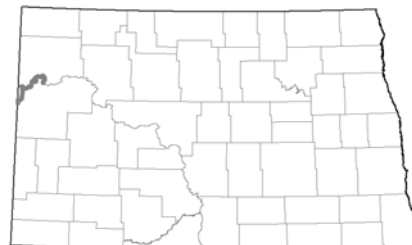
General Description: Grows to 3 inches in length. Member of the minnow family. Light green to brown on dorsal side with a lighter ventral region. Brown and silver spots cover sides. Snout extends over mouth, with a barbel in the corners. Similar to the sicklefin chub except fins have a straight edge.



Status: Year-round resident.

Abundance: Rare.

Primary Habitat: Large turbid rivers, usually with a sand or gravel bottom.



Federal Status: Presently no federal status, was a candidate for listing until 1995.

Reason for Designation: A native species, but found in lower numbers than historically. Habitat loss is the main reason for this designation. Impoundment and channelization of the Missouri River System has changed the slow-moving, warm, turbid water to fast, clear and cold.

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Prefer slow-moving turbid water such as is present in the upper Missouri and lower Yellowstone rivers in North Dakota. Found mainly within the main channel of these systems. Prefer water with a turbidity of less than 250 NTU (nephelometric turbidity unit), but can be found in water up to 500 NTU. They can be found at most all depths within this habitat, but prefer depths between 2 and 5 meters with water temperatures in the range of 18°C to 24°C.

Key Areas for sturgeon chub in North Dakota

Populations occur in the Yellowstone and upper Missouri rivers near the confluence of these two rivers.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

The loss of suitable habitat caused by a change in the riverine regime is the largest problem affecting this species. Historically, sturgeon chub were present throughout the entire Missouri River System, but construction of dams and channelization has largely changed the river system. Dams have reduced the sediment load, in turn lowering turbidity. The release of cold water from impoundments has lowered the overall temperature of the system, making much of the Missouri River too cold for sturgeon chub. Dams also have fragmented populations by restricting movement throughout the system. Channelization of the Missouri River has increased the rate of flow through the system. The narrowing of the river channel has reduced habitat, and changed the natural cycle of the river by reducing over-land flooding. Sturgeon chub have not been found in the Little Missouri River for many years. It is believed that they used the Missouri River as refuge in times of drought in the Little Missouri River. When the Missouri River was impounded, it is possible that this refugia was altered, leaving the fish no place to go during times of low water in the Little Missouri River.

Sturgeon Chub

Level I

Other Natural or Manmade Factors

The use of water for agricultural, industrial, and municipal purposes has also impacted sturgeon chub populations.

RESEARCH AND SURVEY EFFORTS

Current Research

- Currently there is no research specifically targeting sturgeon chub in the state.

Previous Research

- A status study for the sturgeon chub was conducted by Reigh and Elsen in 1979.
- A status report was again conducted in 1993 as a result of the candidate listing by the U.S. Fish and Wildlife Service. This was updated in 2001.
- In 1997 the U.S. Fish and Wildlife Service implemented a reintroduction effort in the Little Missouri River with stock from the lower Yellowstone River in Montana. This was unsuccessful.
- Everett studied the ecology and life history of the sturgeon chub in the Yellowstone and Missouri rivers in 1999.
- Population structure and habitat uses were reported by Galat et al. in 2002.

Additional Research and Survey Efforts Needed

- Conduct a review of historic literature and data collection efforts for all species of conservation priority.
- Re-examine sites where this species has been recorded.
- Information gaps concerning feeding habits, reproduction, seasonal habitat use, and other aspects of sturgeon chub biology need to be addressed.
- Develop a monitoring protocol for the sturgeon chub.

MANAGEMENT RECOMMENDATIONS

- Protect rivers, streams, and riparian areas where possible (i.e. easements and/or acquisition).
- Work with partners to ensure Swampbuster provisions are maintained.
- Continue to use the Section 404 program to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with other federal agencies (i.e. FAA and FHWA) not covered by Section 404 or Swampbuster to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with NDSWC to develop minimum in-stream flow recommendations.
- Work with partners to implement easements (i.e. EWP, WRP, and ACOE Sluffing or Flood Control Easements).
- Develop and promote incentive programs to restore riparian areas.
- Work with partners to implement easements (i.e. EWP and WRP).
- Work with partners to implement easements.
- Work with county zoning planning officials to designate areas in need of protective covenants.
- Develop and promote incentive programs to enhance or restore riparian areas.
- Continue to work with ND 319 Task Force in prioritizing projects within impaired watersheds and implementing BMP's.
- Work to modify dam operation regimes.
- Develop and promote incentive programs for adjacent landowners to improve bank stability through land use changes (e.g. RRBPR).
- Promote non-traditional bank stabilization measures (i.e. root wads, willow waddles, vegetative slope).
- Implement intake conditions or recommendations (i.e. screening and velocity requirements).
- Work with the dam owners for potential removal or modification.
- Control noxious weeds through biological and chemical methods.
- Cooperate with Fisheries Division on state aquatic nuisance species plan.

Sturgeon Chub

Level I

- Survey areas of data gaps. Conduct research/surveys to establish baseline information on SoCP.
- Continue to work with partners in promoting and distributing educational materials related to river, stream and riparian values and good stewardship.
- Species specific actions are found in the Updated status review of the sicklefin and sturgeon chub in the United States.
http://mountainprairie.fws.gov/species/fish/chubs/chub_status_review_032001.pdf

MONITORING PLANS

- No monitoring plan has yet been established.

REFERENCES

- Kelsch, S. W. 1993. Survey of the Fishes of the Little Missouri River from Marmarth to Medora, North Dakota, 1993. Univ. of North Dakota. (Completion report to the North Dakota Game and Fish Department).
- Kelsch, S.W., J. Alm, J. Tesky. 2000. The Distribution of North Dakota Fishes. Unpublished. North Dakota Game and Fish. pp 19.
- Page, L.M., B.M. Burr, 1991. A Field Guide to Freshwater Fishes: North America north of Mexico. New York: Houghton Mifflin Company. pp 104.
- USFWS. 1994. 50 CFR 17 58996-59000. Endangered and threatened wildlife and plants; animal candidate review. Federal Register 59;219. Washington, D.C
- USFWS, 1995. Endangered and Threatened wildlife and plant notice of 90-day finding on the petition to list the sturgeon chub and sicklefin chub as endangered. U.S. Fish and Wildlife Service. 4 pp.
- USFWS, 2001. Updated status review of sicklefin and sturgeon chub in the United States. Denver, CO. report of the U.S. Fish and Wildlife Service. 80 pp.
- Welker, T.L., D.L. Scarnecchia, 2004. Habitat use and population structure of four native minnows (family Cyprinidae) in the upper Missouri and lower Yellowstone rivers, North Dakota (USA). Ecology of Freshwater Fish 13: 8-22.

Sicklefin Chub

Level I

Scientific Name: *Macrhybopsis meeki*

General Description: Grows to a length of 4 inches. Member of the minnow family. Light green to brown on dorsal side with a lighter ventral region. Brown and silver spots cover its sides. The snout extends over the mouth, with a barbel in each corner. Similar to the sturgeon chub except the dorsal fin has a sickle-shaped edge.

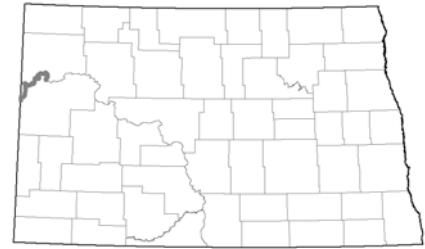


David Ostendorf

Status: Year-round resident.

Abundance: Rare.

Primary Habitat: Large turbid rivers, usually with a sand or gravel bottom.



Federal Status: Presently no federal status, was a candidate for listing until 1995.

Reason for Designation: This native species has declined from its historic population numbers. Habitat loss is the main reason for this designation. Impoundment and channelization of the Missouri River System has converted it to a system of large reservoirs.

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Prefer turbid water such as is present in the upper Missouri and Yellowstone rivers in North Dakota. Found mainly within the main channel of these systems. Prefer water with a turbidity of less than 500 NTU (nephelometric turbidity unit). Sicklefins chub can be found at most depths within this habitat, but prefer depths between 2 and 5 meters with summer water temperatures in the range of 20°C to 24°C.

Key Areas for Sicklefins Chub in North Dakota

Populations occur in the Yellowstone and upper Missouri rivers near the confluence of the two rivers.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

The loss of suitable habitat caused by a change in the riverine regime is the largest problem affecting this species. Historically, sicklefins chub were present throughout the entire Missouri River system. The construction of dams and channelization has largely changed the river system. Dams have reduced the sediment load, in turn lowering turbidity. The release of cold water from impoundments has lowered the overall temperature of the system, making much of the Missouri River too cold for sicklefins chub. Dams also have fragmented populations by restriction movement throughout the system. Entrenchment due to regulated flow control of the Missouri River has increased the rate of flow through the system. Narrowing of the river channel has reduced habitat and changed the natural cycles of the river by reducing over-land flooding. Sicklefins chub now only occur in those areas that maintain qualities of the pre-impoundment system.

Other Natural or Manmade Factors

The use of water for agricultural, industrial, and municipal purposes along the river has also impacted sicklefins chub populations.

Sicklefin Chub

Level I

RESEARCH AND SURVEY EFFORTS

Current Research

- No research for this species is currently being conducted.

Previous Research

- A status study for the sicklefin chub was conducted by Reigh and Elsen in 1979.
- A status report was again conducted in 1993 and 2001 by the U.S. Fish and Wildlife Service.
- Everett studied the ecology and life history of the sicklefin chub in the Yellowstone and Missouri Rivers in 1999.
- Population structure and habitat uses were studied by Galat et al. in 2002.

Additional Research and Survey Efforts Needed

- Conduct a review of historic literature and data collection efforts for all species of conservation priority.
- Establish a protocol for monitoring sicklefin chub populations.
- Locate important areas for this species, including spawning and rearing areas.

MANAGEMENT RECOMMENDATIONS

- Protect rivers, streams, and riparian areas where possible (i.e. easements and/or acquisition).
- Work with partners to ensure Swampbuster provisions are maintained.
- Continue to use the Section 404 program to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with other federal agencies (i.e. FAA and FHWA) not covered by Section 404 or Swampbuster to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with NDSWC to develop minimum in-stream flow recommendations.
- Work with partners to implement easements (i.e. EWP, WRP, and ACOE Sluffing or Flood Control Easements).
- Develop and promote incentive programs to restore riparian areas.
- Work with partners to implement easements (i.e. EWP and WRP).
- Work with partners to implement easements.
- Work with county zoning planning officials to designate areas in need of protective covenants.
- Develop and promote incentive programs to enhance or restore riparian areas.
- Continue to work with ND 319 Task Force in prioritizing projects within impaired watersheds and implementing BMP's.
- Work to modify dam operation regimes.
- Develop and promote incentive programs for adjacent landowners to improve bank stability through land use changes (e.g. RRBPR).
- Promote non-traditional bank stabilization measures (i.e. root wads, willow waddles, vegetative slope).
- Implement intake conditions or recommendations (i.e. screening and velocity requirements).
- Work with the dam owners for potential removal or modification.
- Control noxious weeds through biological and chemical methods.
- Cooperate with Fisheries Division on state aquatic nuisance species plan.
- Survey areas of data gaps. Conduct research/surveys to establish baseline information on SoCP.
- Continue to work with partners in promoting and distributing educational materials related to river, stream and riparian values and good stewardship.
- Species specific actions are found in the Updated status review of the sicklefin and sturgeon chub in the United States.
http://mountainprairie.fws.gov/species/fish/chubs/chub_status_review_032001.pdf

Sicklefin Chub

Level I

MONITORING PLANS

- No monitoring plan has yet been established for this species.

REFERENCES

- Everett, S.R. 1999. Ecology and life history of three native benthic fishes in the Missouri and Yellowstone River. MSc Thesis. University of Idaho, Moscow. 69 pp.
- Galat, D.L. et al. 2002. Synthesis of the Benthic Fish Study. Vol. 5. Population structure and habitat use of benthic fishes along the Missouri and lower Yellowstone rivers. University of Missouri, Columbia, Missouri: U.S. Geological Survey, Cooperative Research Units.
- Kelsh, S.W., J. Alm, J. Tesky. 2000. The Distribution of North Dakota Fishes. Unpublished. North Dakota Game and Fish. 19 pp.
- Page, L.M., B.M. Burr, 1991. A Field Guide to Freshwater Fishes: North America north of Mexico. New York: Houghton Mifflin Company. 104 pp.
- Reigh, R.C., and D.S. Elsen. 1979. Status of the sturgeon chub (*Hybopsis gelida*) and sicklefin chub (*Hybopsis meeki*) in North Dakota. *Prairie Naturalist* 11:49-52.
- USFWS, 1995. Endangered and Threatened wildlife and plant notice of 90-day finding on the petition to list the sturgeon chub and sicklefin chub as endangered. U.S. Fish and Wildlife Service. 4 pp.
- USFWS. 1994. 50 CFR 17 58996-59000. Endangered and threatened wildlife and plants; animal candidate review. *Federal Register* 59:219. Washington, D.C.
- USFWS, 2001. Updated status review of sicklefin and sturgeon chub in the United States. Denver, CO. report of the U.S. Fish and Wildlife Service. 80 pp.
- Welker, T.L., D.L. Scarnecchia, 2004. Habitat use and population structure of four native minnows (family Cyprinidae) in the upper Missouri and lower Yellowstone rivers, North Dakota (USA). *Ecology of Freshwater Fish* 13: 8-22.

Silver Chub

Level II

Scientific Name: *Macrhybopsis storeriana*

General Description: The silver chub grows to 4-5 inches. It has a short head, large eyes, and a long snout. The silver chub is grey-green dorsally, and its sides are silvery. Its caudal fin is forked.

Status: Year-round resident.

Abundance: Rare.

Primary Habitat: Sand, silt, and sometimes gravel-bottomed pools and backwaters of small to large rivers, or lakes.

Federal Status: No federal status. Protected in Canada under the Species at Risk Act.

Reason for Designation: Rare to North Dakota. Little is known about the status of this species. Highly susceptible to poor water quality.



Konrad Schmidt



LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Sand, silt, and sometimes gravel-bottomed pools and backwaters of small to large rivers. Found in riffles and pools with little vegetation.

Key Areas for Silver Chub in North Dakota

The Silver chub is known to occur in the Red River drainage in North Dakota. It is found mainly in the northern 2/3rds of the Red River. It has also been documented in the Sheyenne, Forest and Turtle rivers.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

Water quality is a concern for this species. Silver chub are dependent on insect larva as a food source. Many of these species are intolerant of poor water quality.

Other Natural or Manmade Factors

The addition of dams within the Red River drainage has changed the flow regime and segmented populations. A decrease in water quality due to poor land use practices in the Red River basin may have contributed to the decline of this species.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- Currently there are no ongoing studies or surveys specifically targeting the silver chub.

Previous Research and Survey Efforts

- Red River basin and tributary streams were surveyed during the 1960s by the University of North Dakota (UND).

Silver Chub

Level II

- In the late 1970s, Red River basin and tributary stream surveys were conducted by the Minnesota Department of Natural Resources, Ecological Services Section (MDNR ECO).
- Surveys were conducted in the Sheyenne River downstream from Baldhill Dam by Peterka (1978).
- A similar study was conducted on the Red River during 1983 and 1984.
- Investigations of stream fishes in the Red River basin occurred during 1993 and 1994 as a part of two major studies.
- Several sites throughout the basin have been sampled for fishes using electro-fishing gear by the MDNR, Minnesota Pollution Control Agency (MPCA), North Dakota Department of Health (NDDoH), U.S. Environmental Protection Agency (EPA), and the U.S. Geological Survey (USGS). These studies are a part of the USGS National Water Quality Assessment program (Stoner et al. 1993) and the development of an index of biotic integrity for fishes in the basin (Goldstein et al. 1994).

Additional Research and Survey Efforts Needed

- Conduct a review of historic literature and data collection efforts for all fish species of conservation priority.
- Re-examine sites where this species has been recorded.
- Develop a monitoring plan for this species.

MANAGEMENT RECOMMENDATIONS

- Protect rivers, streams, and riparian areas where possible (i.e. easements and/or acquisition).
- Work with partners to ensure Swampbuster provisions are maintained.
- Continue to use the Section 404 program to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with other federal agencies (i.e. FAA and FHWA) not covered by Section 404 or Swampbuster to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with NDSWC to develop minimum in-stream flow recommendations.
- Work with partners to implement easements (i.e. EWP, WRP, and ACOE Sluffing or Flood Control Easements).
- Develop and promote incentive programs to restore riparian areas.
- Work with partners to implement easements (i.e. EWP and WRP).
- Work with partners to implement easements.
- Work with county zoning planning officials to designate areas in need of protective covenants.
- Develop and promote incentive programs to enhance or restore riparian areas.
- Continue to work with ND 319 Task Force in prioritizing projects within impaired watersheds and implementing BMP's.
- Work to modify dam operation regimes.
- Develop and promote incentive programs for adjacent landowners to improve bank stability through land use changes (e.g. RRBPR).
- Promote non-traditional bank stabilization measures (i.e. root wads, willow waddles, vegetative slope).
- Implement intake conditions or recommendations (i.e. screening and velocity requirements).
- Work with the dam owners for potential removal or modification.
- Control noxious weeds through biological and chemical methods.
- Cooperate with Fisheries Division on state aquatic nuisance species plan.
- Survey areas of data gaps. Conduct research/surveys to establish baseline information on SoCP.
- Continue to work with partners in promoting and distributing educational materials related to river, stream and riparian values and good stewardship.

Silver Chub

Level II

MONITORING PLANS

- Develop a monitoring plan for this species.
- Ongoing surveys along with the North Dakota Game and Fish Department's incidental reporting system could be used to monitor this species.
- The North Dakota Department of Health will begin Index of biotic Integrity (IBI) surveys for all watersheds in of North Dakota in the summer of 2005. These surveys will document all species captured.

REFERENCES

- Becker, G. C. 1983. Fishes of Wisconsin. Univ. Wisconsin Press, Madison. 1052 pp.
- Goldstein, R.M. et al. 1994. Concepts for an Index of Biotic Integrity for Streams of the Red River of the North Basin: Proceedings of the North Dakota Water Quality Symposium, March 30-31, 1994. Fargo, North Dakota, pp. 169-180.
- Koel, Todd Marvin. 1997. Distribution of Fishes in the Red River of the North Basin on Multivariate Environmental Gradients. Ph.D. thesis, North Dakota State University, Fargo, North Dakota. 275 pp.
- Page, L. M., and B. M. Burr. 1991. A Field Guide to Freshwater Fishes: North America north of Mexico. Houghton Mifflin Company, Boston, Massachusetts. 432 pp.
- Peterka, John J. and Todd M. Koel. 1996. Distribution and dispersal of fishes in the Red River basin. Report submitted to Interbasin Biota Transfer Studies Program, Water Resources Research Institute, Fargo, ND. Northern Prairie Wildlife Research Center Home Page.
<http://www.npwrc.usgs.gov/resource/distr/others/fishred/fishred.htm> (Version 29AUG97).
- Power, Greg J. and F. Ryckman. 1998. Status of North Dakota's Fishes. ND Game and Fish Dept., Div. Rpt. 27, 20 pp.
- Stoner et al. 1993. Red River of the North Basin, Minnesota, North Dakota, and South Dakota: Water Resource Bulletin. v. 29, pp. 575-615.

Pearl Dace

Level I

Scientific Name: *Margariscus margarita*

General Description: Length up to 6 ½ in. Member of the minnow family. Body generally cylindrical in shape. Back olive in color with a black stripe running along the side. Faded in adults. Silver sides with black specks. Belly yellow, red, white, or a combination of the three.

Status: Year-round resident.

Abundance: Rare.

Primary Habitat: Found in pools of streams and small rivers, usually with sand or gravel bottom. They may also be found in ponds and lakes.

Federal Status: No federal status.

Reason for Designation: Degradation of habitat is the main reason for the designation of the pearl dace as a Level I Species of Conservation Priority. Critical clear headwater streams used by this species are threatened by a change in land use practices.



Konrad Schmidt



Current Distribution

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Pearl dace prefer cool, clear headwater streams 1-3 meters wide and less than 0.5 meters deep. They are associated with pools with slow to moderate current in these streams. Bottom substrate is generally sand or gravel.

Key Areas for Pearl Dace in North Dakota

The pearl dace has not been recorded in many locations in North Dakota. The Tongue River, a small tributary of the Pembina River in northeastern North Dakota, has a population of pearl dace, as do the Park, Goose, and Willow rivers. Beaver Creek in the Missouri River drainage and the Souris River also have records of Pearl Dace.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

Degradation of quality habitat is recognized as the leading cause for decline in this species; specifically, loss and destruction of riparian habitat along waterways caused by agriculture and grazing.

Other Natural or Manmade Factors

The addition of dams within the Red River drainage has changed the flow regime and also blocks fish movement into suitable habitat. A decline in water quality due to poor land use practices in the Red River basin may have contributed to the decrease of this species.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- Currently no studies or surveys specifically targeting the pearl dace are in progress.

Pearl Dace

Level I

Previous Research and Survey Efforts

- Red River streams were surveyed during the 1960s by the University of North Dakota (UND).
- Surveys of several Minnesota tributaries to the Red River were conducted by the BMNH from 1974-1976.
- In the late 1970s, Red River basin stream surveys were conducted by the Minnesota Department of Natural Resources, Ecological Services Section (MDNR ECO).
- A study was conducted on the Red River during 1983 and 1984.
- In 1985, the North Dakota Natural Heritage Inventory and the NDGF sampled fishes from 15 sites in the Pembina River watershed.
- Investigations of stream fishes in the Red River basin occurred during 1993 and 1994 as a part of two major studies.
- Several sites throughout the basin have been sampled for fishes using electro-fishing gear by the MDNR, Minnesota Pollution Control Agency (MPCA), North Dakota Department of Health (NDDH), U.S. Environmental Protection Agency (EPA), and the U.S. Geological Survey (USGS). These studies are a part of the USGS National Water Quality Assessment program (Stoner et al. 1993) and the development of an Index of Biotic Integrity (IBI) for rivers in the basin (Goldstein et al. 1994).

Additional Research and Survey Efforts Needed

- Conduct a review of historic literature and data collection efforts for all species of conservation priority.
- Re-examine sites where this species has been recorded.
- Develop a protocol to monitor this species.

MANAGEMENT RECOMMENDATIONS

- Protect rivers, streams, and riparian areas where possible (i.e. easements and/or acquisition).
- Work with partners to ensure Swampbuster provisions are maintained.
- Continue to use the Section 404 program to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with other federal agencies (i.e. FAA and FHWA) not covered by Section 404 or Swampbuster to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with NDSWC to develop minimum in-stream flow recommendations.
- Work with partners to implement easements (i.e. EWP, WRP, and ACOE Sluffing or Flood Control Easements).
- Develop and promote incentive programs to restore riparian areas.
- Work with partners to implement easements (i.e. EWP and WRP).
- Work with partners to implement easements.
- Work with county zoning planning officials to designate areas in need of protective covenants.
- Develop and promote incentive programs to enhance or restore riparian areas.
- Continue to work with ND 319 Task Force in prioritizing projects within impaired watersheds and implementing BMP's.
- Work to modify dam operation regimes.
- Develop and promote incentive programs for adjacent landowners to improve bank stability through land use changes (e.g. RRBPR).
- Promote non-traditional bank stabilization measures (i.e. root wads, willow waddles, vegetative slope).
- Implement intake conditions or recommendations (i.e. screening and velocity requirements).
- Work with the dam owners for potential removal or modification.
- Control noxious weeds through biological and chemical methods.
- Cooperate with Fisheries Division on state aquatic nuisance species plan.
- Survey areas of data gaps. Conduct research/surveys to establish baseline information on SoCP.
- Continue to work with partners in promoting and distributing educational materials related to river, stream and riparian values and good stewardship.

Pearl Dace

Level I

MONITORING PLANS

- No monitoring plan has been identified for this species.
- The North Dakota Game and Fish Department's incidental reporting system as well as existing survey efforts could be used to monitor this species.
- The North Dakota Department of Health will begin IBI surveys of all watersheds in North Dakota starting in the summer of 2005. These will document specific fish and invertebrate species as a part of the process.

REFERENCES

- Goldstein, R.M. et al. 1994. Concepts for an Index of Biotic Integrity for Streams of the Red River of the North Basin: Proceedings of the North Dakota Water Quality Symposium, March 30-31, 1994. Fargo, North Dakota, pp. 169-180.
- Koel, Todd Marvin. 1997. Distribution of fishes in the Red River of the North Basin on Multivariate environmental gradients. Ph.D. thesis, North Dakota State University, Fargo, North Dakota. 275 pp.
- Page, L. M., and B. M. Burr. 1991. A Field Guide to Freshwater Fishes: North America north of Mexico. Houghton Mifflin Company, Boston, Massachusetts. 432 pp.
- Peterka, John J. and Todd M. Koel. 1996. Distribution and dispersal of fishes in the Red River basin. Report submitted to Interbasin Biota Transfer Studies Program, Water Resources Research Institute, Fargo, ND. Northern Prairie Wildlife Research Center Home Page.
<http://www.npwrc.usgs.gov/resource/distr/others/fishred/fishred.htm> (Version 29AUG97).
- Power, Greg J. and F. Ryckman. 1998. Status of North Dakota's Fishes. ND Game and Fish Dept., Div. Rpt. 27, 20 pp.
- Stoner et al. 1993. Red River of the North Basin, Minnesota, North Dakota, and South Dakota: Water Resource Bulletin. v. 29, pp. 575-615.

Hornyhead Chub

Level III

Scientific Name: *Nocomis biguttatus*

General Description: Member of the minnow family growing to 10 inches in length. Olive on top and grows lighter as you move down the body with an iridescent stripe along back. Belly pale yellow. Bright red spot behind eye on males, brassy in females. Males have many small bumps or tubercles on head



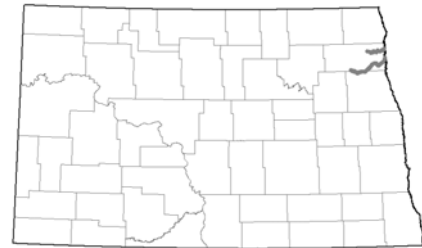
Status: Year-round resident.

Abundance: Rare.

Primary Habitat: Found in pools and slow runs of clear, small rivers.

Federal Status: No federal status

Reason for Designation: Water quality degradation is a concern for the rivers this species inhabits.



LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Found in pools and slow runs of clear, small rivers.

Key Areas for Hornyhead chub in North Dakota

The hornyhead chub is presently found in the Forest and Park rivers. Historically it was also in the Sheyenne and Maple rivers. No key locations have been identified.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

Degradation of quality habitat is recognized as the leading cause for decline of this species; specifically, loss and destruction of riparian habitat along waterways caused by poor agriculture and grazing practices.

Other Natural or Manmade Factors

The addition of dams to many streams in the Red River drainage has changed the flow regime and blocked fish movement, segmenting populations. A decrease in water quality has contributed to the decline of this species.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- There are currently no studies or surveys specifically targeting the hornyhead chub.

Previous Research and Survey Efforts

- Red River basin streams were surveyed during the 1960s by the University of North Dakota (UND).
- In the late 1970s, Red River basin stream surveys were conducted by the Minnesota Department of Natural Resources, Ecological Services Section (MDNR ECO).

Hornyhead Chub

Level III

- Investigations of stream fishes in the Red River basin occurred during 1993 and 1994 as a part of two major studies.
- Several sites throughout the basin have been sampled for fishes using electro-fishing gear by the MDNR, Minnesota Pollution Control Agency (MPCA), North Dakota Department of Health (NDDH), U.S. Environmental Protection Agency (EPA), and the U.S. Geological Survey (USGS). These studies are a part of the USGS National Water Quality Assessment program (Stoner et al. 1993) and the development of an index of biotic integrity for fishes in the basin (Goldstein et al. 1994).

Additional Research and Survey Efforts Needed

- Conduct a review of historic literature and data collection efforts for all species of conservation priority.
- Re-examine sites where this species has been recorded.
- Develop a protocol to monitor this species.

MANAGEMENT RECOMMENDATIONS

- Protect rivers, streams, and riparian areas where possible (i.e. easements and/or acquisition).
- Work with partners to ensure Swampbuster provisions are maintained.
- Continue to use the Section 404 program to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with other federal agencies (i.e. FAA and FHWA) not covered by Section 404 or Swampbuster to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with NDSWC to develop minimum in-stream flow recommendations.
- Work with partners to implement easements (i.e. EWP, WRP, and ACOE Sluffing or Flood Control Easements).
- Develop and promote incentive programs to restore riparian areas.
- Work with partners to implement easements (i.e. EWP and WRP).
- Work with partners to implement easements.
- Work with county zoning planning officials to designate areas in need of protective covenants.
- Develop and promote incentive programs to enhance or restore riparian areas.
- Continue to work with ND 319 Task Force in prioritizing projects within impaired watersheds and implementing BMP's.
- Work to modify dam operation regimes.
- Develop and promote incentive programs for adjacent landowners to improve bank stability through land use changes (e.g. RRBPR).
- Promote non-traditional bank stabilization measures (i.e. root wads, willow waddles, vegetative slope).
- Implement intake conditions or recommendations (i.e. screening and velocity requirements).
- Work with the dam owners for potential removal or modification.
- Control noxious weeds through biological and chemical methods.
- Cooperate with Fisheries Division on state aquatic nuisance species plan.
- Survey areas of data gaps. Conduct research/surveys to establish baseline information on SoCP.
- Continue to work with partners in promoting and distributing educational materials related to river, stream and riparian values and good stewardship.

MONITORING PLANS

- No monitoring plan has been developed for this species.
- The North Dakota Game and Fish Department's incidental reporting system as well as existing survey efforts could be used to monitor this species.
- The North Dakota Department of Health will begin Index of Biotic Integrity (IBI) surveys of all watersheds in North Dakota in the summer of 2005. These will document specific species.

Hornyhead Chub

Level III

REFERENCES

- Becker, G. C. 1983. Fishes of Wisconsin. Univ. Wisconsin Press, Madison. 1052 pp.
- Goldstein, R.M. et al. 1994. Concepts for an Index of Biotic Integrity for Streams of the Red River of the North Basin: Proceedings of the North Dakota Water Quality Symposium, March 30-31, 1994. Fargo, North Dakota, pp. 169-180.
- Kelsh, S.W., J. Alm, J. Tesky. 2001. The Distribution of North Dakota Fishes. Unpublished. North Dakota Game and Fish. 19 pp.
- Koel, Todd Marvin. 1997. Distribution of Fishes in the Red River of the North Basin on Multivariate environmental gradients. Ph.D. thesis, North Dakota State University, Fargo, North Dakota. 275 pp.
- Page, L. M., and B. M. Burr. 1991. A Field Guide to Freshwater Fishes: North America north of Mexico. Houghton Mifflin Company, Boston, Massachusetts. 432 pp.
- Peterka, John J. and Todd M. Koel. 1996. Distribution and dispersal of fishes in the Red River basin. Report submitted to the Interbasin Biota Transfer Studies Program, Water Resources Research Institute, Fargo, ND. Northern Prairie Wildlife Research Center Home Page.
<http://www.npwrc.usgs.gov/resource/distr/others/fishred/fishred.htm> (Version 29AUG97).
- Power, Greg J. and F. Ryckman. 1998. Status of North Dakota's Fishes. ND Game and Fish Dept., Div. Rpt. 27, 20 pp.
- Stoner et al. 1993. Red River of the North Basin, Minnesota, North Dakota, and South Dakota: Water Resource Bulletin. v. 29, pp. 575-615.

Pugnose Shiner

Level III

Scientific Name: *Notropis anogenus*

General Description: Grows to 2 inches in length. Olive on top with a thin black line that runs along the upper back. Sides and belly silvery with a black outline around the edge of scales. Mouth on this species is sharply upturned.

Status: Possibly Extirpated.

Abundance: Rare.

Primary Habitat: Found in clear pools and runs in small to medium sized streams. Prefers areas with vegetation over sand or mud bottoms.

Federal Status: No federal status.

Reason for Designation: Rare in the Red River, possibly extirpated. It has not been collected in 40 years in North Dakota, but is present in Red River tributaries in Minnesota.



Historic Range

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Inhabits pools and small runs in clear streams. Prefers vegetated areas with a firm bottom.

Key Areas for Pugnose Shiner in North Dakota

This species was last collected in the Forest River in 1964, but it is not known if it is still present. Historically found in the Red and Sheyenne rivers. No key areas have been identified for this species.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

Degradation of quality habitat is recognized as the leading cause for decline in this species; specifically, loss and destruction of riparian habitat along waterways caused by agriculture and grazing. This species requires clear water and is highly susceptible to increased sedimentation.

Other Natural or Manmade Factors

The addition of dams within the Red River drainages has changed the flow regime. This has fragmented habitat and blocking movement.

A decrease in water quality due to a number of land use practices in the Red River basin may have contributed to the decline of this species.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- Currently no studies or surveys specifically targeting the pugnose shiner are in progress.

Previous Research and Survey Efforts

- Red River basin streams were surveyed during the 1960s by the University of North Dakota (UND).
- Surveys of several tributaries of the Red River in Minnesota were conducted by the BMNH from 1974-1976.

Pugnose Shiner

Level III

- In the late 1970s, Red River basin stream surveys were conducted by the Minnesota Department of Natural Resources, Ecological Services Section (MDNR ECO).
- Fish were collected in the Sheyenne River downstream from the Baldhill Dam by Peterka (1978).
- A similar study was conducted on the Red River during 1983 and 1984. The Otter Tail River was surveyed during the summers of 1978-1980.
- In 1985, the North Dakota Natural Heritage Inventory and the NDGF sampled fishes from 15 sites in the Pembina River watershed.
- Investigations of stream fishes in the Red River basin occurred during 1993 and 1994 as a part of two major studies.
- Several sites throughout the basin have been sampled for fishes using electro fishing gear by the MDNR, Minnesota Pollution Control Agency (MPCA), North Dakota Department of Health (NDDH), U.S. Environmental Protection Agency (EPA), and the U.S. Geological Survey (USGS). These studies are a part of the USGS National Water Quality Assessment program (Stoner et al. 1993) and the development of an index of biotic integrity for streams in the basin (Goldstein et al. 1994).

Additional Research and Survey Efforts Needed

- Conduct a review of historic literature and data collection efforts for all species of conservation priority.
- Re-examine sites where this species has been recorded.
- Develop a monitoring protocol for this species.

MANAGEMENT RECOMMENDATIONS

- Protect rivers, streams, and riparian areas where possible (i.e. easements and/or acquisition).
- Work with partners to ensure Swampbuster provisions are maintained.
- Continue to use the Section 404 program to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with other federal agencies (i.e. FAA and FHWA) not covered by Section 404 or Swampbuster to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with NDSWC to develop minimum in-stream flow recommendations.
- Work with partners to implement easements (i.e. EWP, WRP, and ACOE Sluffing or Flood Control Easements).
- Develop and promote incentive programs to restore riparian areas.
- Work with partners to implement easements (i.e. EWP and WRP).
- Work with partners to implement easements.
- Work with county zoning planning officials to designate areas in need of protective covenants.
- Develop and promote incentive programs to enhance or restore riparian areas.
- Continue to work with ND 319 Task Force in prioritizing projects within impaired watersheds and implementing BMP's.
- Work to modify dam operation regimes.
- Develop and promote incentive programs for adjacent landowners to improve bank stability through land use changes (e.g. RRBPR).
- Promote non-traditional bank stabilization measures (i.e. root wads, willow waddles, vegetative slope).
- Implement intake conditions or recommendations (i.e. screening and velocity requirements).
- Work with the dam owners for potential removal or modification.
- Control noxious weeds through biological and chemical methods.
- Cooperate with Fisheries Division on state aquatic nuisance species plan.
- Survey areas of data gaps. Conduct research/surveys to establish baseline information on SoCP.
- Continue to work with partners in promoting and distributing educational materials related to river, stream and riparian values and good stewardship.

Pugnose Shiner

Level III

MONITORING PLANS

- No monitoring plan has been identified for this species.
- The North Dakota Game and Fish Department's incidental reporting system as well as existing survey efforts could be used to monitor this species.
- The North Dakota Department of Health will begin Index of Biotic Integrity (IBI) surveys for all watersheds in North Dakota in the summer of 2005. These surveys will document all species captured.

REFERENCES

- Goldstein, R.M. et al. 1994. Concepts for an Index of Biotic Integrity for Streams of the Red River of the North Basin: Proceedings of the North Dakota Water Quality Symposium, March 30-31, 1994. Fargo, North Dakota, pp. 169-180.
- Kelsh, S.W., J. Alm, J. Tesky. 2001. The Distribution of North Dakota Fishes. Unpublished. North Dakota Game and Fish. 19 pp.
- Koel, Todd Marvin. 1997. Distribution of fishes in the Red River of the North Basin on Multivariate Environmental Gradients. Ph.D. thesis, North Dakota State University, Fargo, North Dakota. 275 pp.
- Page, L. M., and B. M. Burr. 1991. A Field Guide to Freshwater Fishes: North America north of Mexico. Houghton Mifflin Company, Boston, Massachusetts. 432 pp.
- Peterka, John J. and Todd M. Koel. 1996. Distribution and dispersal of fishes in the Red River basin. Report submitted to Interbasin Biota Transfer Studies Program, Water Resources Research Institute, Fargo, ND. Northern Prairie Wildlife Research Center Home Page.
<http://www.npwrc.usgs.gov/resource/distr/others/fishred/fishred.htm> (Version 29AUG97).
- Power, Greg J. and F. Ryckman. 1998. Status of North Dakota's Fishes. ND Game and Fish Dept., Div. Rpt. 27, 20 pp.
- Stoner et al. 1993. Red River of the North Basin, Minnesota, North Dakota, and South Dakota: Water Resource Bulletin. v. 29, pp. 575-615.

Blacknose Shiner

Level III

Scientific Name: *Notropis heterolepis*

General Description: Grows to a length of 3 ½ inches. Compressed body. Black lateral line entire length of body with crescents within it. Olive to straw colored on top with lighter sides and belly. Scales outlined below lateral line.

Status: Year-round resident.

Abundance: Rare.

Primary Habitat: Primarily found in vegetated pools that are part of a stream system.

Federal Status: No federal status.

Reason for Designation: Extirpated from much of its historic range in North Dakota. Populations confined to only a few sites.



Konrad Schmidt



LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Prefer clear, vegetated pools within a stream system.

Key Areas for Blacknose Shiner in North Dakota

It appears the blacknose shiner is currently only present in spring-fed pools in a stretch of the Sheyenne River in Ransom County. Historically, this species was also documented in the Forest and Maple rivers.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

Degradation of quality habitat is recognized as the leading cause for decline in this species; specifically loss and destruction of riparian habitat along waterways caused by poor agriculture and grazing practices.

Other Natural or Manmade Factors

The addition of dams to the Red River drainage has changed the flow regime and segmented populations. Poor water quality, due to runoff and sedimentation in many stretches of the Red River basin has contributed to the decline of this species.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- There are currently no studies or surveys specifically targeting the blacknose shiner.

Previous Research and Survey Efforts

- Red River basin streams were surveyed during the 1960s by the University of North Dakota (UND).
- In the late 1970s, Red River basin stream surveys were conducted by the Minnesota Department of Natural Resources, Ecological Services Section (MDNR ECO).
- A survey was conducted on the Red River during 1983 and 1984.

Blacknose Shiner

Level III

- Investigations of stream fishes in the Red River basin occurred during 1993 and 1994 as a part of two major studies.
- Several sites throughout the basin have been sampled for fishes using electro-fishing gear by the MDNR, Minnesota Pollution Control Agency (MPCA), North Dakota Department of Health (NDDH), U.S. Environmental Protection Agency (EPA), and the U.S. Geological Survey (USGS). These studies are a part of the USGS National Water Quality Assessment program (Stoner et al. 1993) and the development of an index of biotic integrity for fishes in the basin (Goldstein et al. 1994).
- A survey of the Sheyenne River and its tributaries within the Sheyenne National Grasslands was conducted by Brooks in 2000.

Additional Research and Survey Efforts Needed

- Conduct a review of historic literature and data collection efforts for all species of conservation priority.
- Re-examine sites where this species has been recorded.
- Develop a protocol to monitor this species.

MANAGEMENT RECOMMENDATIONS

- Protect rivers, streams, and riparian areas where possible (i.e. easements and/or acquisition).
- Work with partners to ensure Swampbuster provisions are maintained.
- Continue to use the Section 404 program to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with other federal agencies (i.e. FAA and FHWA) not covered by Section 404 or Swampbuster to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with NDSWC to develop minimum in-stream flow recommendations.
- Work with partners to implement easements (i.e. EWP, WRP, and ACOE Sluffing or Flood Control Easements).
- Develop and promote incentive programs to restore riparian areas.
- Work with partners to implement easements (i.e. EWP and WRP).
- Work with partners to implement easements.
- Work with county zoning planning officials to designate areas in need of protective covenants.
- Develop and promote incentive programs to enhance or restore riparian areas.
- Continue to work with ND 319 Task Force in prioritizing projects within impaired watersheds and implementing BMP's.
- Work to modify dam operation regimes.
- Develop and promote incentive programs for adjacent landowners to improve bank stability through land use changes (e.g. RRBPR).
- Promote non-traditional bank stabilization measures (i.e. root wads, willow waddles, vegetative slope).
- Implement intake conditions or recommendations (i.e. screening and velocity requirements).
- Work with the dam owners for potential removal or modification.
- Control noxious weeds through biological and chemical methods.
- Cooperate with Fisheries Division on state aquatic nuisance species plan.
- Survey areas of data gaps. Conduct research/surveys to establish baseline information on SoCP.
- Continue to work with partners in promoting and distributing educational materials related to river, stream and riparian values and good stewardship.

MONITORING PLANS

- No monitoring plan has been identified for this species.
- The USFS will continue to monitor Iron Springs Creek for blacknose shiner.
- On going surveys along with the North Dakota Game and Fish Department's incidental reporting system could be used to monitor this species.

Blacknose Shiner

Level III

- The North Dakota Department of Health will begin Index of Biotic Integrity (IBI) surveys in the summer of 2005 for all North Dakota's watersheds. This will document all species encountered.

REFERENCES

- Becker, G. C. 1983. Fishes of Wisconsin. Univ. Wisconsin Press, Madison. 1052 pp.
- Brooks, L. 2001. Fish Survey on Seven Tributaries to the Sheyenne River, Sheyenne National Grasslands, North Dakota September 9-10, 2000. Report to the U.S. Forest Service-Sheyenne Ranger District. Lisbon, North Dakota. 24 pp.
- Goldstein, R.M. et al. 1994. Concepts for an Index of Biotic Integrity for Streams of the Red River of the North Basin: Proceedings of the North Dakota Water Quality Symposium, March 30-31, 1994. Fargo, North Dakota, pp. 169-180.
- Kelsh, S.W., J. Alm, J. Tesky. 2001. The Distribution of North Dakota Fishes. Unpublished. North Dakota Game and Fish. 19 pp.
- Koel, Todd Marvin. 1997. Distribution of fishes in the Red River of the North Basin on Multivariate environmental gradients. Ph.D. thesis, North Dakota State University, Fargo, North Dakota. 275 pp.
- Page, L. M., and B. M. Burr. 1991. A field guide to freshwater fishes: North America north of Mexico. Houghton Mifflin Company, Boston, Massachusetts. 432 pp.
- Peterka, John J. and Todd M. Koel. 1996. Distribution and dispersal of fishes in the Red River basin. Report submitted to Interbasin Biota Transfer Studies Program, Water Resources Research Institute, Fargo, ND. Northern Prairie Wildlife Research Center Home Page.
<http://www.npwrc.usgs.gov/resource/distr/others/fishred/fishred.htm> (Version 29AUG97).
- Power, Greg J. and F. Ryckman. 1998. Status of North Dakota's Fishes. ND Game and Fish Dept., Div. Rpt. 27, 20 pp.
- Stoner et al. 1993. Red River of the North Basin, Minnesota, North Dakota, and South Dakota: Water Resource Bulletin. v. 29, pp. 575-615.

Rosyface Shiner

Level III

Scientific Name: *Hybopsis rubrifrons*

General Description: Slender body shape with a sharply pointed head. Grows up to 3 ½ inches in length. Dark on top with a black streak on top of a silver stripe. Body is a bluish sheen. Faint red spot at the base of the dorsal fin. Breeding males have bright red heads.

Status: Year-round resident.

Abundance: Rare.

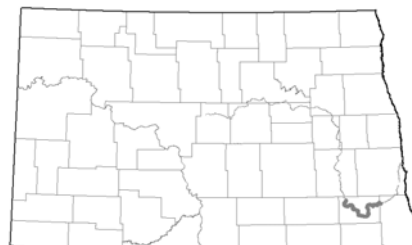
Primary Habitat: Found in pools with some current, or more swiftly flowing stretches adjacent to pools.

Federal Status: No federal status.

Reason for Designation: Rare in the Red River drainage. Stream degradation and loss of suitable habitat within its range due to land use practices is the major concern for the decline of this species.



Konrad Schmidt



LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

The rosyface shiner rarely occurs in lakes, and usually occurs in clear, swift streams, 1.5 meters deep and 3-24 meters wide, with substrates of gravel, rubble, or sand.

Key Areas for Rosyface Shiner in North Dakota

The rosyface shiner has been collected from portions of the Sheyenne River in Ransom County. It was last collected in 1994.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

Degradation of quality habitat is recognized as the leading cause of decline for this species, specifically loss and destruction of stream habitat caused by poor agriculture and grazing practices.

Other Natural or Manmade Factors

The addition of dams to the Sheyenne River has fragmented habitat and blocked fish movement.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- Currently there are no studies or surveys specifically targeting the rosyface shiner.

Previous Research and Survey Efforts

- Red River basin streams were surveyed during the 1960s by the University of North Dakota (UND).
- Surveys of several tributaries to the Red River in Minnesota were conducted by the BMNH from 1974-1976.
- In the late 1970s, Red River basin stream surveys were conducted by the Minnesota Department of Natural Resources, Ecological Services Section (MDNR ECO).

Rosyface Shiner

Level III

- Fish were collected in the Sheyenne River downstream from the Baldhill Dam by Peterka (1978).
- Investigations of stream fishes in the Red River basin occurred during 1993 and 1994 as a part of two major studies.
- Several sites throughout the basin have been sampled for fishes using electro-fishing gear by the MDNR, Minnesota Pollution Control Agency (MPCA), North Dakota Department of Health (NDDH), U.S. Environmental Protection Agency (EPA), and the U.S. Geological Survey (USGS). These studies are a part of the USGS National Water Quality Assessment program (Stoner et al. 1993) and the development of an index of biotic integrity for streams in the basin (Goldstein et al. 1994).

Additional Research and Survey Efforts Needed

- Conduct a review of historic literature and data collection efforts for this species.
- Re-examine sites where this species has been recorded.
- Develop a protocol to monitor this species.

MANAGEMENT RECOMMENDATIONS

- Protect rivers, streams, and riparian areas where possible (i.e. easements and/or acquisition).
- Work with partners to ensure Swampbuster provisions are maintained.
- Continue to use the Section 404 program to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with other federal agencies (i.e. FAA and FHWA) not covered by Section 404 or Swampbuster to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with NDSWC to develop minimum in-stream flow recommendations.
- Work with partners to implement easements (i.e. EWP, WRP, and ACOE Sluffing or Flood Control Easements).
- Develop and promote incentive programs to restore riparian areas.
- Work with partners to implement easements (i.e. EWP and WRP).
- Work with partners to implement easements.
- Work with county zoning planning officials to designate areas in need of protective covenants.
- Develop and promote incentive programs to enhance or restore riparian areas.
- Continue to work with ND 319 Task Force in prioritizing projects within impaired watersheds and implementing BMP's.
- Work to modify dam operation regimes.
- Develop and promote incentive programs for adjacent landowners to improve bank stability through land use changes (e.g. RRBPR).
- Promote non-traditional bank stabilization measures (i.e. root wads, willow waddles, vegetative slope).
- Implement intake conditions or recommendations (i.e. screening and velocity requirements).
- Work with the dam owners for potential removal or modification.
- Control noxious weeds through biological and chemical methods.
- Cooperate with Fisheries Division on state aquatic nuisance species plan.
- Survey areas of data gaps. Conduct research/surveys to establish baseline information on SoCP.
- Continue to work with partners in promoting and distributing educational materials related to river, stream and riparian values and good stewardship.

MONITORING PLANS

- No monitoring plan has been identified for this species.
- Ongoing surveys along with the North Dakota Game and Fish Department's incidental reporting system could be used to monitor this species.

Rosyface Shiner

Level III

- The North Dakota Department of Health will begin Index of Biotic Integrity (IBI) surveys in the summer of 2005 for all of North Dakota's watersheds. This will document all species encountered.

REFERENCES

Kelsh, S.W., J. Alm, J. Tesky. 2001. The Distribution of North Dakota Fishes. Unpublished. North Dakota Game and Fish. 19 pp.

Koel, Todd Marvin. 1997. Distribution of fishes in the Red River of the North Basin on Multivariate Environmental Gradients. Ph.D. thesis, North Dakota State University, Fargo, North Dakota. 275 pp.

Page, L. M., and B. M. Burr. 1991. A Field Guide to Freshwater Fishes: North America north of Mexico. Houghton Mifflin Company, Boston, Massachusetts. 432 pp.

Peterka, John J. and Todd M. Koel. 1996. Distribution and dispersal of fishes in the Red River basin. Report submitted to Interbasin Biota Transfer Studies Program, Water Resources Research Institute, Fargo, ND. Northern Prairie Wildlife Research Center Home Page.
<http://www.npwrc.usgs.gov/resource/distr/others/fishred/fishred.htm> (Version 29AUG97).

Power, Greg J. and F. Ryckman. 1998. Status of North Dakota's Fishes. ND Game and Fish Dept., Div. Rpt. 27, 20 pp.

Northern Redbelly Dace

Level II

Scientific Name: *Phoxinus eos*

General Description: Member of the minnow family. Up to 3.5 inches in length. Dark dorsally, with two black lines that run along its side. The upper line is thin and breaks into spots at the tail. The lower line continues the length of the fish. Belly is red, white, yellow or a combination of the three.

Status: Year-round resident.

Abundance: Uncommon.

Primary Habitat: Prefers slower moving stretches of rivers with clear water over silt bottoms. Vegetation is usually found in close proximity. Found to a lesser extent in pools and impoundments.

Federal Status: None.

Reason for Designation: Clear headwater streams used by this species are threatened by poor land use practices.



Konrad Schmidt



LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

The redbelly dace is reliant on cold, clear headwater streams and can be found in pools and behind dams in those streams. The bottom substrate is normally mud. Northern redbelly dace are associated with vegetation in these areas.

Key Areas for Northern Redbelly Dace in North Dakota

In the Red River drainage the Northern redbelly dace is found in the Rush, Green, Goose, Tongue, and Park rivers, and spring-fed pools in the Sheyenne River. A specific area of note is the stretch of Sheyenne River that runs through the Sheyenne National Grasslands and Mirror Pool Wildlife Management Area. Populations also occur in the Missouri River drainage, specifically Brush, Apple, Beaver, and Antelope creeks, and the Cannonball, Knife, Heart, and Little Missouri rivers.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

Degradation of quality habitat is recognized as the leading cause for decline in this species; specifically, loss of riparian habitat along waterways caused by agriculture and grazing.

Other Natural or Manmade Factors

The addition of dams to the Red River drainage has changed the flow regime and fragmented populations. Lower water quality due to poor land use practices in the Red River basin have contributed to the decline of this species.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- There are currently no ongoing studies or surveys in progress specifically targeting the Northern redbelly dace.

Northern Redbelly Dace

Level II

Previous Research and Survey Efforts

- Red River basin streams were surveyed during the 1960s by the University of North Dakota (UND).
- Surveys of several tributaries to the Red River in Minnesota were conducted by the BMNH from 1974-1976.
- In the late 1970s, Red River basin stream surveys were conducted by the Minnesota Department of Natural Resources, Ecological Services Section (MDNR ECO).
- Fish were surveyed in the Sheyenne River downstream from the Baldhill Dam by Peterka (1978).
- A similar study was conducted on the Red River during 1983 and 1984.
- Investigations of stream fishes in the Red River basin occurred during 1993 and 1994 as a part of two major studies.
- Sites throughout the state have been sampled for fishes using electro-fishing gear by the MDNR, Minnesota Pollution Control Agency (MPCA), North Dakota Department of Health (NDDH), U.S. Environmental Protection Agency (EPA), and the U.S. Geological Survey (USGS). These studies are a part of the USGS National Water Quality Assessment program (Stoner et al. 1993) and the development of an index of biotic integrity for fishes in the basin (Goldstein et al. 1994).

Additional Research and Survey Efforts Needed

- Conduct a review of historic literature and data collection efforts for all species of conservation priority.
- Re-examine sites where this species has been recorded.
- Develop a protocol to monitor this species.

MANAGEMENT RECOMMENDATIONS

- Protect rivers, streams, and riparian areas where possible (i.e. easements and/or acquisition).
- Work with partners to ensure Swampbuster provisions are maintained.
- Continue to use the Section 404 program to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with other federal agencies (i.e. FAA and FHWA) not covered by Section 404 or Swampbuster to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with NDSWC to develop minimum in-stream flow recommendations.
- Work with partners to implement easements (i.e. EWP, WRP, and ACOE Sluffing or Flood Control Easements).
- Develop and promote incentive programs to restore riparian areas.
- Work with partners to implement easements (i.e. EWP and WRP).
- Work with partners to implement easements.
- Work with county zoning planning officials to designate areas in need of protective covenants.
- Develop and promote incentive programs to enhance or restore riparian areas.
- Continue to work with ND 319 Task Force in prioritizing projects within impaired watersheds and implementing BMP's.
- Work to modify dam operation regimes.
- Develop and promote incentive programs for adjacent landowners to improve bank stability through land use changes (e.g. RRBPR).
- Promote non-traditional bank stabilization measures (i.e. root wads, willow waddles, vegetative slope).
- Implement intake conditions or recommendations (i.e. screening and velocity requirements).
- Work with the dam owners for potential removal or modification.
- Control noxious weeds through biological and chemical methods.
- Cooperate with Fisheries Division on state aquatic nuisance species plan.
- Survey areas of data gaps. Conduct research/surveys to establish baseline information on SoCP.

Northern Redbelly Dace

Level II

- Continue to work with partners in promoting and distributing educational materials related to river, stream and riparian values and good stewardship.

MONITORING PLANS

- No monitoring plan has been identified for this species.
- Ongoing surveys along with the North Dakota Game and Fish Department's incidental reporting system could be used to monitor this species.
- The North Dakota Department of Health began Index of Biotic Integrity (IBI) surveys in the summer of 2005 for all of North Dakota's watersheds. This will document all species encountered.

REFERENCES

Becker, G. C. 1983. Fishes of Wisconsin. Univ. Wisconsin Press, Madison. 1,052 pp.

Goldstein, R.M. et al. 1994. Concepts for an Index of Biotic Integrity for Streams of the Red River of the North Basin: Proceedings of the North Dakota Water Quality Symposium, March 30-31, 1994. Fargo, North Dakota, pp. 169-180.

Koel, Todd Marvin. 1997. Distribution of fishes in the Red River of the North Basin on Multivariate environmental gradients. Ph.D. thesis, North Dakota State University, Fargo, North Dakota. 275 pp.

Page, L. M., and B. M. Burr. 1991. A Field Guide to Freshwater Fishes: North America north of Mexico. Houghton Mifflin Company, Boston, Massachusetts. 432 pp.

Peterka, John J. and Todd M. Koel. 1996. Distribution and dispersal of fishes in the Red River basin. Report submitted to Interbasin Biota Transfer Studies Program, Water Resources Research Institute, Fargo, ND. Northern Prairie Wildlife Research Center Home Page.
<http://www.npwrc.usgs.gov/resource/distr/others/fishred/fishred.htm> (Version 29AUG97).

Power, Greg J. and F. Ryckman. 1998. Status of North Dakota's Fishes. ND Game and Fish Dept., Div. Rpt. 27, 20 pp.

Stoner et al. 1993. Red River of the North Basin, Minnesota, North Dakota, and South Dakota: Water Resource Bulletin. v. 29, pp. 575-615.

Finescale Dace

Level III

Scientific Name: *Phoxinus neogaeus*

General Description: Grows to 4 inches in length. Gray along top of body with olive sides above a gold stripe that runs the length of the body. White/silver belly. Entire body speckled in black.



Konrad Schmidt

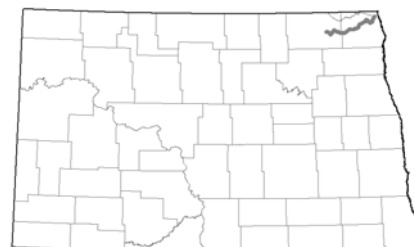
Status: Year-round resident.

Abundance: Rare.

Primary Habitat: Found in pools and slow moving water in small streams. Bottom substrate is normally silted, with vegetation.

Federal Status: No federal status.

Reason for Designation: The only viable population in the western basin of the Red River is in the Tongue River.



LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

The finescale dace usually occurs in cool, boggy waters of lakes and ponds, or streams which are 1-3 meters wide and 0.1-0.5 meters deep, with substrates of sand, gravel, or silt.

Key Areas for Finescale Dace in North Dakota

The finescale dace is found only in the Tongue River in northeastern North Dakota.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

Degradation of habitat is recognized as the leading cause for decline in this species, specifically destruction of headwater stream habitat caused by agriculture and grazing.

Other Natural or Manmade Factors

A decrease in water quality due to a number of land use practices in the Red River basin has contributed to the decline of this species. The addition of dams within the Red River drainage has changed the flow regime of the basin. Impoundments also fragment habitat and blocks migration of fish species.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- Currently, there are no studies or surveys specifically targeting the finescale dace.

Previous Research and Survey Efforts

- Red River streams were surveyed during the 1960s by the University of North Dakota (UND).
- Surveys of several tributaries to the Red River in Minnesota were conducted by the BMNH from 1974-1976.
- In the late 1970s, Red River stream surveys were conducted by the Minnesota Department of Natural Resources, Ecological Services Section (MDNR ECO).
- Fish were collected in the Sheyenne River downstream from the Baldhill Dam by Peterka in 1978.

Finescale Dace

Level III

- A similar study was conducted on the Red River during 1983 and 1984. The Otter Tail River was surveyed during the summers of 1978-1980.
- In 1985, the North Dakota Natural Heritage Inventory and the NDGFD sampled fishes from 15 sites in the Pembina River watershed.
- Investigations of stream fishes in the Red River basin occurred during 1993 and 1994 as a part of two major studies.
- Several sites throughout the basin have been sampled for fishes using electro-fishing gear by the MDNR, Minnesota Pollution Control Agency (MPCA), North Dakota Department of Health (NDDoH), U.S. Environmental Protection Agency (EPA), and the U.S. Geological Survey (USGS). These studies are a part of the USGS National Water Quality Assessment program and the development of an index of biotic integrity for the basin.

Additional Research and Survey Efforts Needed

- Conduct a review of historic literature and data collection efforts for this species.
- Re-examination of sites where this species has been recorded is needed.
- Development of a protocol to monitor this species is needed.

MANAGEMENT RECOMMENDATIONS

- Protect rivers, streams, and riparian areas where possible (i.e. easements and/or acquisition).
- Work with partners to ensure Swampbuster provisions are maintained.
- Continue to use the Section 404 program to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with other federal agencies (i.e. FAA and FHWA) not covered by Section 404 or Swampbuster to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with NDSWC to develop minimum in-stream flow recommendations.
- Work with partners to implement easements (i.e. EWP, WRP, and ACOE Sluffing or Flood Control Easements).
- Develop and promote incentive programs to restore riparian areas.
- Work with partners to implement easements (i.e. EWP and WRP).
- Work with partners to implement easements.
- Work with county zoning planning officials to designate areas in need of protective covenants.
- Develop and promote incentive programs to enhance or restore riparian areas.
- Continue to work with ND 319 Task Force in prioritizing projects within impaired watersheds and implementing BMP's.
- Work to modify dam operation regimes.
- Develop and promote incentive programs for adjacent landowners to improve bank stability through land use changes (e.g. RRBPR).
- Promote non-traditional bank stabilization measures (i.e. root wads, willow waddles, vegetative slope).
- Implement intake conditions or recommendations (i.e. screening and velocity requirements).
- Work with the dam owners for potential removal or modification.
- Control noxious weeds through biological and chemical methods.
- Cooperate with Fisheries Division on state aquatic nuisance species plan.
- Survey areas of data gaps. Conduct research/surveys to establish baseline information on SoCP.
- Continue to work with partners in promoting and distributing educational materials related to river, stream and riparian values and good stewardship.

MONITORING PLANS

- No monitoring plan has been identified for this species.
- Ongoing surveys along with the NDGFD's incidental reporting system could be used to monitor this species.

Finescale Dace

Level III

- The NDDoH began Index of Biotic Integrity (IBI) surveys in the summer of 2005 for all of North Dakota's watersheds which will document all species encountered.

REFERENCES

- Goldstein, R.M. et al. 1994. Concepts for an Index of Biotic Integrity for Streams of the Red River of the North Basin: Proceedings of the North Dakota Water Quality Symposium, March 30-31, 1994. Fargo, North Dakota, pp. 169-180.
- Kelsh, S.W., J. Alm, J. Tesky. 2001. The Distribution of North Dakota Fishes. Unpublished. North Dakota Game and Fish. 19 pp.
- Koel, Todd Marvin. 1997. Distribution of fishes in the Red River of the North Basin on Multivariate environmental gradients. Ph.D. thesis, North Dakota State University, Fargo, North Dakota. 275 pp.
- Page, L. M., and B. M. Burr. 1991. A field guide to freshwater fishes: North America north of Mexico. Houghton Mifflin Company, Boston, Massachusetts. 432 pp.
- Peterka, John J. and Todd M. Koel. 1996. Distribution and dispersal of fishes in the Red River basin. Report submitted to Interbasin Biota Transfer Studies Program, Water Resources Research Institute, Fargo, ND. Northern Prairie Wildlife Research Center Home Page.
<http://www.npwrc.usgs.gov/resource/distr/others/fishred/fishred.htm> (Version 29AUG97).
- Power, Greg J. and F. Ryckman. 1998. Status of North Dakota's Fishes. ND Game and Fish Dept., Div. Rpt. 27, 20 pp.
- Stoner et al. 1993. Red River of the North Basin, Minnesota, North Dakota, and South Dakota: Water Resource Bulletin. v. 29, pp. 575-615.

Flathead Chub

Level II

Scientific Name: *Platygobio gracilis*

General Description: The flathead chub is a larger member of the Chub family, reaching a foot in length. It has a broad, flat head, tapering to a point. Its eye appears small compared to body size. Its color is dusky brown on top with silvery sides and has large sickle-shaped dorsal and pectoral fins. The first ray of the dorsal fin extends beyond last ray. It has a barbel in each corner of its mouth.



Montana Fish, Wildlife and Parks

Status: Year-round resident.

Abundance: Locally common in areas.

Primary Habitat: Found mostly in large turbid rivers with sand or gravel bottoms.

Federal Status: No federal status.



Reason for Designation: A native species to North Dakota. Major declines over much of its range have been documented. Habitat loss is the main reason for this designation. Impoundment and channelization of the Missouri river system has changed the slow moving, warm, turbid water to reservoir habitat.

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Prefer slow turbid water such as is present in the upper Missouri and Yellowstone rivers in North Dakota. Found mainly within the main channel of these systems. Prefer water with a turbidity of less than 250 NTU (nephelometric turbidity unit). They can be found at most depths within this habitat, but prefer depths less than 1 meter with water temperatures in the range of 18°C to 22°C.

Key Areas for Flathead Chub in North Dakota

Populations occur in the Little Missouri, Yellowstone and upper Missouri rivers near the confluence. Many Missouri River tributaries such as the Knife, Heart and Cannonball rivers hold populations.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

The loss of habitat caused by a change in the riverine regime is the largest problem affecting this species. Historically, flathead chub were present throughout the entire Missouri River System. The construction of dams and channelization has largely changed the river system. Dams have reduced the sediment load, in turn lowering turbidity. The release of cold water from impoundments has lowered the overall temperature of the system, making much of the Missouri River too cold for flathead chub. Dams have fragment populations by restricting movement. Flathead chub now only occur in those areas that maintain qualities of the pre-impoundment system.

Other Natural or Manmade Factors

Competition and predation from nonnative fish that have been introduced into the Missouri River System impact flathead chub populations. The use of water for agricultural, industrial, and municipal purposes along the river has also impacted flathead chub populations.

Flathead Chub

Level II

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- Currently there is no research targeting this species.

Previous Research and Survey Efforts

- The biology of the flathead chub was studied in Montana in 1985 by Gould.
- Welker and Scarnecchia conducted a study on habitat use and population structure in 1997-1998.

Additional Research and Survey Efforts Needed

- Information gaps concerning feeding habits, reproduction, seasonal habitat use, and other aspects of flathead chub biology need to be addressed.
- Develop a monitoring protocol for the flathead chub.

MANAGEMENT RECOMMENDATIONS

- Protect rivers, streams, and riparian areas where possible (i.e. easements and/or acquisition).
- Work with partners to ensure Swampbuster provisions are maintained.
- Continue to use the Section 404 program to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with other federal agencies (i.e. FAA and FHWA) not covered by Section 404 or Swampbuster to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with NDSWC to develop minimum in-stream flow recommendations.
- Work with partners to implement easements (i.e. EWP, WRP, and ACOE Sluffing or Flood Control Easements).
- Develop and promote incentive programs to restore riparian areas.
- Work with partners to implement easements (i.e. EWP and WRP).
- Work with partners to implement easements.
- Work with county zoning planning officials to designate areas in need of protective covenants.
- Develop and promote incentive programs to enhance or restore riparian areas.
- Continue to work with ND 319 Task Force in prioritizing projects within impaired watersheds and implementing BMP's.
- Work to modify dam operation regimes.
- Develop and promote incentive programs for adjacent landowners to improve bank stability through land use changes (e.g. RRBWP).
- Promote non-traditional bank stabilization measures (i.e. root wads, willow waddles, vegetative slope).
- Implement intake conditions or recommendations (i.e. screening and velocity requirements).
- Work with the dam owners for potential removal or modification.
- Control noxious weeds through biological and chemical methods.
- Cooperate with Fisheries Division on state aquatic nuisance species plan.
- Survey areas of data gaps. Conduct research/surveys to establish baseline information on SoCP.
- Continue to work with partners in promoting and distributing educational materials related to river, stream and riparian values and good stewardship.

MONITORING PLANS

- A monitoring protocol has not been identified for this species.

Flathead Chub

Level II

REFERENCES

- Fisher, S. J., D. W. Willis, M. M. Olson, and S. C. Krentz. 2002. Flathead chubs, *Platygobio gracilis*, in the upper Missouri River: the biology of a species at risk in an endangered habitat. *Canadian Field-Naturalist* 116:26-41.
- Gould, W. 1985. Aspects of the biology of the flathead chub (*HYBOPSIS GRACILIS*) in Montana. *Great Basin Nat.* 45: 332-336.
- Kelsh, S.W., J. Alm, J. Tesky. 2000. The Distribution of North Dakota Fishes. Unpublished. North Dakota Game and Fish. pp 19.
- Page, L.M., and B. M. Burr. 1991. A Field Guide to Freshwater Fishes: North America North of Mexico. Houghton Mifflin Company, Boston, Massachusetts. 432 pp.
- Welker, T.L., D.L. Scarnecchia, 2004. Habitat use and population structure of four native minnows (family Cyprinidae) in the upper Missouri and lower Yellowstone rivers, North Dakota (USA). *Ecology of Freshwater Fish* 13: 8-22.

Blue Sucker

Level I

Scientific Name: *Cycoreptus elongatus*

General Description: Body generally compressed and elongated. Head small for body size. Bluish gray in color. Dorsal fin long, falcated. Deeply forked caudal fin. Snout rounded with subterminal mouth. Papillae on lips.



Status: Year-round resident.

Abundance: Rare.

Primary Habitat: Deep areas with swift current on medium to large turbid rivers. Bottom normally sand or gravel. Use confluence areas of larger tributaries for spawning.



Federal Status: None presently. Former candidate species.

Reason for Designation: Loss of free-flowing stretches of the Missouri River due to impoundment and channelization has reduced suitable habitat for this species.

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

This species is well adapted to living in swift current of large turbid rivers. Found mostly in riffles or narrow chutes. Requires gravel bottoms free of sediment.

Key Areas for Blue Sucker in North Dakota

Blue suckers occur at highest frequency in the Missouri River's free-flowing stretches above Lake Sakakawea and Lake Oahe. The confluence areas of larger tributaries such as the Knife and Cannonball rivers are likely key areas for spawning.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

The loss of suitable habitat caused by a change in the riverine regime is the largest problem affecting this species. Historically, blue suckers were present throughout the entire Missouri River System. The construction of dams and channelization has largely changed the river system. Dams have reduced the sediment load, which in turn has lowered turbidity. The release of cold water from impoundments has lowered the overall temperature of the system making much of the Missouri River too cold for blue sucker. Dams also have fragmented populations by restricting movement throughout the system.

Other Natural or Manmade Factors

The use of water for agricultural, industrial, and municipal purposes along the river may impact blue sucker populations by reducing water levels. Entrainment of fish in irrigation systems, and oil and gas development within the basin are also recognized as threats.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- The USFWS, USGS, and Montana Fish, Wildlife, and Parks currently track movements of tagged blue sucker in the Yellowstone and Missouri rivers.

Blue Sucker

Level I

Previous Research and Survey Efforts

- A status report for the blue sucker was conducted in 1993.

Additional Research and Survey Efforts Needed

- Conduct a review of historic literature and data collection efforts for all species of conservation priority.
- Re-examine sites where this species has been recorded.
- Locate and protect key spawning areas along the Missouri River System.

MANAGEMENT RECOMMENDATIONS

- Protect rivers, streams, and riparian areas where possible (i.e. easements and/or acquisition).
- Work with partners to ensure Swampbuster provisions are maintained.
- Continue to use the Section 404 program to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with other federal agencies (i.e. FAA and FHWA) not covered by Section 404 or Swampbuster to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with NDSWC to develop minimum in-stream flow recommendations.
- Work with partners to implement easements (i.e. EWP, WRP, and ACOE Sluffing or Flood Control Easements).
- Develop and promote incentive programs to restore riparian areas.
- Work with partners to implement easements (i.e. EWP and WRP).
- Work with partners to implement easements.
- Work with county zoning planning officials to designate areas in need of protective covenants.
- Develop and promote incentive programs to enhance or restore riparian areas.
- Continue to work with ND 319 Task Force in prioritizing projects within impaired watersheds and implementing BMP's.
- Work to modify dam operation regimes.
- Develop and promote incentive programs for adjacent landowners to improve bank stability through land use changes (e.g. RRBRP).
- Promote non-traditional bank stabilization measures (i.e. root wads, willow waddles, vegetative slope).
- Implement intake conditions or recommendations (i.e. screening and velocity requirements).
- Work with the dam owners for potential removal or modification.
- Control noxious weeds through biological and chemical methods.
- Cooperate with Fisheries Division on state aquatic nuisance species plan.
- Survey areas of data gaps. Conduct research/surveys to establish baseline information on SoCP.
- Continue to work with partners in promoting and distributing educational materials related to river, stream and riparian values and good stewardship.

MONITORING PLANS

- Present surveys will be maintained and new surveys developed to monitor this species.

REFERENCES

Elstad, S.A. and S.J. Weldon. 1993. Draft status report on Blue Sucker (*Cyprinus elongatus*), a candidate endangered or threatened species. U.S. Fish and Wildlife Service. Bismarck, ND.

Kelsh, S.W., J. Alm, J. Tesky. 2000. The Distribution of North Dakota Fishes. Unpublished. North Dakota Game and Fish. 19 pp.

NatureServe Explorer, an online encyclopedia of life. 7/26/2004. <http://www.natureserve.org/explorer/>

Blue Sucker

Level I

Page, L.M., and B.M. Burr. 1991. A Field Guide to Freshwater Fishes: North America North of Mexico. Houghton Mifflin Company, Boston, Massachusetts. 432 pp.

Williams, J. E., J.E. Johnson, D. A. Hendrickson, S. Contreras-Balderas, J. D. Williams, M. Navarro-Mendoza, D. E. McAllister, and J. E. Deacon. 1989. Fishes of North America endangered, threatened, or of special concern: 1989. Fisheries 14:2-20.

Yellow Bullhead

Level III

Scientific Name: *Ameiurus natalis*

General Description: Up to 18 inches in length. Brown on top increasing in yellow toward the belly. Has a sharp spine in its back and side fins. Distinguishable from other bullhead species by color of barbels around the mouth. Yellow bullhead barbels are white or yellow in color as apposed to black in other bullhead species.

Status: Year-round resident.

Abundance: Rare.

Primary Habitat: Found in pools and slack water of streams. Bottom substrate normally soft (mud, silt).

Federal Status: No federal status.

Reason for Designation: Rare to North Dakota. Species is on the western edge of range. Denoted as a species of concern by the Dakota Chapter of the American Fisheries Society.



Konrad Schmidt



LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Found in pools, backwaters, and slack current of rivers. May also be found in impoundments. Bottom substrate is normally mud or silt. It has been collected a few times from the Red River.

Key Areas for Yellow Bullhead in North Dakota

No key areas have been identified for this species to date.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

Yellow bullhead are habitat specialists and do not tolerate changes to the system. Land use in the area has changed the hydrology of the river from its pre-settlement conditions.

Other Natural or Manmade Factors

The addition of dams to rivers in the Red River drainage has changed flow regimes and also blocked movement of fish into suitable habitat. A decrease in water quality due to poor land use practices in the Red River basin may contribute to the decline of this species.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- There are ongoing no current studies or surveys specifically targeting the yellow bullhead.

Previous Research and Survey Efforts

- Red River basin streams were surveyed during the 1960s by the University of North Dakota (UND).
- Surveys of several tributaries to the Red River in Minnesota were conducted by the BMNH from 1974-1976.

Yellow Bullhead

Level III

- In the late 1970s, Red River basin stream surveys were conducted by the Minnesota Department of Natural Resources, Ecological Services Section (MDNR ECO).
- A similar study was conducted on the Red River during 1983 and 1984. The Otter Tail River was surveyed during the summers of 1978-1980.
- Investigations of stream fishes in the Red River basin occurred during 1993 and 1994 as a part of two major studies.
- Several sites throughout the basin have been sampled for fishes using electro fishing gear by the MDNR, Minnesota Pollution Control Agency (MPCA), North Dakota Department of Health (NDDH), U.S. Environmental Protection Agency (EPA), and the U.S. Geological Survey (USGS). These studies are a part of the USGS National Water Quality Assessment program (Stoner et al. 1993) and the development of an index of biotic integrity for fishes in the basin (Goldstein et al. 1994).

Additional Research and Survey Efforts Needed

- Conduct a review of historic literature and data collection efforts for all species of conservation priority.
- Re-examine sites where this species has been recorded.
- Develop a protocol to monitor this species.

MANAGEMENT RECOMMENDATIONS

- Protect rivers, streams, and riparian areas where possible (i.e. easements and/or acquisition).
- Work with partners to ensure Swampbuster provisions are maintained.
- Continue to use the Section 404 program to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with other federal agencies (i.e. FAA and FHWA) not covered by Section 404 or Swampbuster to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with NDSWC to develop minimum in-stream flow recommendations.
- Work with partners to implement easements (i.e. EWP, WRP, and ACOE Sluffing or Flood Control Easements).
- Develop and promote incentive programs to restore riparian areas.
- Work with partners to implement easements (i.e. EWP and WRP).
- Work with partners to implement easements.
- Work with county zoning planning officials to designate areas in need of protective covenants.
- Develop and promote incentive programs to enhance or restore riparian areas.
- Continue to work with ND 319 Task Force in prioritizing projects within impaired watersheds and implementing BMP's.
- Work to modify dam operation regimes.
- Develop and promote incentive programs for adjacent landowners to improve bank stability through land use changes (e.g. RRBPR).
- Promote non-traditional bank stabilization measures (i.e. root wads, willow waddles, vegetative slope).
- Implement intake conditions or recommendations (i.e. screening and velocity requirements).
- Work with the dam owners for potential removal or modification.
- Control noxious weeds through biological and chemical methods.
- Cooperate with Fisheries Division on state aquatic nuisance species plan.
- Survey areas of data gaps. Conduct research/surveys to establish baseline information on SoCP.
- Continue to work with partners in promoting and distributing educational materials related to river, stream and riparian values and good stewardship.

MONITORING PLANS

- No monitoring plan has been identified for this species.

Yellow Bullhead

Level III

- Ongoing surveys along with the North Dakota Game and Fish Department's incidental reporting system could be used to monitor this species.
- The North Dakota Department of Health began Index of Biotic Integrity (IBI) surveys in the summer of 2005 for all of North Dakota's watersheds. This will document all species encountered.

REFERENCES

Becker, G. C. 1983. Fishes of Wisconsin. Univ. Wisconsin Press, Madison. 1,052 pp.

Goldstein, R.M. et al. 1994. Concepts for an Index of Biotic Integrity for Streams of the Red River of the North Basin: Proceedings of the North Dakota Water Quality Symposium, March 30-31, 1994. Fargo, North Dakota, pp. 169-180.

Koel, Todd Marvin. 1997. Distribution of Fishes in the Red River of the North Basin on Multivariate Environmental Gradients. Ph.D. thesis, North Dakota State University, Fargo, North Dakota. 275 pp.

Page, L.M., and B.M. Burr. 1991. A Field Guide to Freshwater Fishes: North America North of Mexico. Houghton Mifflin Company, Boston, Massachusetts. 432 pp.

Peterka, John J. and Todd M. Koel. 1996. Distribution and dispersal of fishes in the Red River basin. Report submitted to Interbasin Biota Transfer Studies Program, Water Resources Research Institute, Fargo, ND. Northern Prairie Wildlife Research Center Home Page.
<http://www.npwrc.usgs.gov/resource/distr/others/fishred/fishred.htm> (Version 29AUG97).

Power, Greg J. and F. Ryckman. 1998. Status of North Dakota's Fishes. ND Game and Fish Dept., Div. Rpt. 27, 20 pp.

Stoner et al. 1993. Red River of the North Basin, Minnesota, North Dakota, and South Dakota: Water Resource Bulletin. v. 29, pp. 575-615.

Flathead Catfish

Level III

Scientific Name: *Pylodictis olivaris*

General Description: Large fish, up to five feet in length. Large, flat, broad head. Dark above with a lighter belly. Lower jaw extending past upper jaw. Barbels along the lower lip. Fin on back and both sides have a sharp spine. Distinguishable from others in the family by large head, extended lower jaw, and white tip on caudal fin.

Status: Year-round resident

Abundance: Rare

Primary Habitat: Found mainly in large rivers in pools with brushy debris. Can also be found in impoundments.

Federal Status: No federal status

Reason for Designation: Few records in the state for this species. Listed as a species of concern by the American Fisheries Society Dakota Chapter.



Historic Distribution

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Found in pools and slow moving stretches in rivers. Prefer areas with debris and a hard bottom. Also can be found in impoundments where proper spawning habitat is available. Young can be found in shallow, rocky riffles.

Key Areas for Flathead Catfish in North Dakota

Historically found in the Missouri and Little Missouri rivers, as well as tributaries. Appears to be presently only in Lake Oahe portion of the Missouri River. No key areas have yet been identified for this species.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

The loss of suitable habitat caused by a change in the riverine regime is the largest problem affecting this species. The construction of dams has largely changed the river system. Dams have reduced the sediment load in turn lowering turbidity, lowered the overall water temperature, and fragmented populations by restricting fish movement throughout the system.

Other Natural or Manmade Factors

The use of water for agricultural, industrial, and municipal purposes along the Missouri River System has also impacted fish populations.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- Currently no research targeting the flathead catfish is being conducted.

Previous Research and Survey Efforts

- The North Dakota Game and Fish Dept. conducts yearly fish surveys in the Missouri River and many of its tributaries.

Flathead Catfish

Level III

Additional Research and Survey Efforts Needed

- Conduct a review of historic literature and data collection efforts for all species of conservation priority.
- Re-examine sites where this species has been recorded.

MANAGEMENT RECOMMENDATIONS

- Protect rivers, streams, and riparian areas where possible (i.e. easements and/or acquisition).
- Work with partners to ensure Swampbuster provisions are maintained.
- Continue to use the Section 404 program to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with other federal agencies (i.e. FAA and FHWA) not covered by Section 404 or Swampbuster to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with NDSWC to develop minimum in-stream flow recommendations.
- Work with partners to implement easements (i.e. EWP, WRP, and ACOE Sluffing or Flood Control Easements).
- Develop and promote incentive programs to restore riparian areas.
- Work with partners to implement easements (i.e. EWP and WRP).
- Work with partners to implement easements.
- Work with county zoning planning officials to designate areas in need of protective covenants.
- Develop and promote incentive programs to enhance or restore riparian areas.
- Continue to work with ND 319 Task Force in prioritizing projects within impaired watersheds and implementing BMP's.
- Work to modify dam operation regimes.
- Develop and promote incentive programs for adjacent landowners to improve bank stability through land use changes (e.g. RRBRP).
- Promote non-traditional bank stabilization measures (i.e. root wads, willow waddles, vegetative slope).
- Implement intake conditions or recommendations (i.e. screening and velocity requirements).
- Work with the dam owners for potential removal or modification.
- Control noxious weeds through biological and chemical methods.
- Cooperate with Fisheries Division on state aquatic nuisance species plan.
- Survey areas of data gaps. Conduct research/surveys to establish baseline information on SoCP.
- Continue to work with partners in promoting and distributing educational materials related to river, stream and riparian values and good stewardship.

MONITORING PLANS

- The North Dakota Game and Fish Department's incidental reporting system as well as existing survey efforts will be used to monitor this species.
- The North Dakota Department of Health began Index of Biotic Integrity (IBI) surveys of all the watersheds in North Dakota in the summer of 2005. These will document specific species.

REFERENCES

- Kelsh, S.W., J. Alm, J. Tesky. 2001. The Distribution of North Dakota Fishes. Unpublished. North Dakota Game and Fish. 19 pp.
- Lee, L.A., and J.W. Terrell. 1987. Habitat suitability index models: flathead catfish. U.S. Fish Wildl. Serv. Biol. Rep. 82(10.152). 39 pp.
- Page, L.M., and B.M. Burr. 1991. A Field Guide to Freshwater Fishes: North America North of Mexico. Houghton Mifflin Company, Boston, Massachusetts. 432 pp.

Trout-perch

Level II

Scientific Name: *Percopsis omiscomaycus*

General Description: Grows to 7 inches. Light yellow in color with rows of dusky brown spots along the back. Top of head is unscaled. Pearly white spots on the underside of the head. Also has a small fleshy adipose fin near the tail.



Status: Year-round resident.

Abundance: Uncommon.

Primary Habitat: Primarily found in lakes, but may be found in deeper pools of rivers and streams. Bottoms substrate is normally sand.

Federal Status: No federal status.

Reason for Designation: Imperiled in much of its northern range. Loss of suitable habitat seems to be the largest factor affecting this species.



LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Typically in lakes but also in deep flowing pools of creeks and small to large rivers; usually over sand. Spawns in shallow water over sand or gravel bars. Often spawns in streams in spring and uses deeper water during the rest of the year.

Key Areas for Trout-perch in North Dakota

Found throughout the Red River system including the Sheyenne River. Records also exist from the Souris River.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

Land uses, most notably agricultural practices have changed the landscape and reduced the habitat quality for this species. Specifically, the use of ditches to drain wetlands has drastically changed the flow regime, and increased the levels of sediment and run-off that enter streams and rivers.

Other Natural or Manmade Factors

The addition of dams to the Red River drainage has changed the flow regime and fragmented populations. A decrease in water quality due to poor land use practices in the Red River basin may have contributed to the decline of this species.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- There are currently no ongoing studies or surveys specifically targeting the trout-perch.

Previous Research and Survey Efforts

- Red River basin streams were surveyed during the 1960s by the University of North Dakota (UND).
- Surveys of several tributaries to the Red River in Minnesota were conducted by the BMNH from 1974-1976.

Trout-perch

Level II

- In the late 1970s, Red River basin stream surveys were conducted by the Minnesota Department of Natural Resources, Ecological Services Section (MDNR ECO).
- Sampling was conducted in the Sheyenne River downstream from the Baldhill Dam by Peterka (1978).
- A similar study was conducted on the Red River during 1983 and 1984.
- Investigations of stream fishes in the Red River basin occurred during 1993 and 1994 as a part of two major studies.
- Several sites throughout the basin have been sampled for fishes using electro-fishing gear by the MDNR, Minnesota Pollution Control Agency (MPCA), North Dakota Department of Health (NDDH), U.S. Environmental Protection Agency (EPA), and the U.S. Geological Survey (USGS). These studies are a part of the USGS National Water Quality Assessment program (Stoner et al. 1993) and the development of an index of biotic integrity for fishes in the basin (Goldstein et al. 1994).

Additional Research and Survey Efforts Needed

- Conduct a review of historic literature and data collection efforts for all fish species of conservation priority.
- Re-examine sites where this species has been recorded.
- Develop a monitoring plan for this species.

MANAGEMENT RECOMMENDATIONS

- Protect rivers, streams, and riparian areas where possible (i.e. easements and/or acquisition).
- Work with partners to ensure Swampbuster provisions are maintained.
- Continue to use the Section 404 program to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with other federal agencies (i.e. FAA and FHWA) not covered by Section 404 or Swampbuster to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with NDSWC to develop minimum in-stream flow recommendations.
- Work with partners to implement easements (i.e. EWP, WRP, and ACOE Sluffing or Flood Control Easements).
- Develop and promote incentive programs to restore riparian areas.
- Work with partners to implement easements (i.e. EWP and WRP).
- Work with partners to implement easements.
- Work with county zoning planning officials to designate areas in need of protective covenants.
- Develop and promote incentive programs to enhance or restore riparian areas.
- Continue to work with ND 319 Task Force in prioritizing projects within impaired watersheds and implementing BMP's.
- Work to modify dam operation regimes.
- Develop and promote incentive programs for adjacent landowners to improve bank stability through land use changes (e.g. RRBPR).
- Promote non-traditional bank stabilization measures (i.e. root wads, willow waddles, vegetative slope).
- Implement intake conditions or recommendations (i.e. screening and velocity requirements).
- Work with the dam owners for potential removal or modification.
- Control noxious weeds through biological and chemical methods.
- Cooperate with Fisheries Division on state aquatic nuisance species plan.
- Survey areas of data gaps. Conduct research/surveys to establish baseline information on SoCP.
- Continue to work with partners in promoting and distributing educational materials related to river, stream and riparian values and good stewardship.

Trout-perch

Level II

MONITORING PLANS

- No monitoring plan has been identified for this species.
- Ongoing surveys along with the North Dakota Game and Fish Department's incidental reporting system could be used to monitor this species.
- The North Dakota Department of Health began Index of Biotic Integrity (IBI) surveys for all watershed of North Dakota in the summer of 2005. These surveys will document all species captured.

REFERENCES

Becker, G. C. 1983. Fishes of Wisconsin. Univ. Wisconsin Press, Madison. 1,052 pp.

Goldstein, R.M. et al. 1994. Concepts for an Index of Biotic Integrity for Streams of the Red River of the North Basin: Proceedings of the North Dakota Water Quality Symposium, March 30-31, 1994. Fargo, North Dakota, pp. 169-180.

Koel, Todd Marvin. 1997. Distribution of Fishes in the Red River of the North Basin on Multivariate Environmental Gradients. Ph.D. thesis, North Dakota State University, Fargo, North Dakota. 275 pp.

Page, L. M., and B. M. Burr. 1991. A Field Guide to Freshwater Fishes: North America North of Mexico. Houghton Mifflin Company, Boston, Massachusetts. 432 pp.

Peterka, John J. and Todd M. Koel. 1996. Distribution and Dispersal of Fishes in the Red River Basin. Report submitted to Interbasin Biota Transfer Studies Program, Water Resources Research Institute, Fargo, ND. Northern Prairie Wildlife Research Center Home Page.
<http://www.npwrc.usgs.gov/resource/distr/others/fishred/fishred.htm> (Version 29AUG97).

Power, Greg J. and F. Ryckman. 1998. Status of North Dakota's Fishes. ND Game and Fish Dept., Div. Rpt. 27, 20 pp.

Stoner et al. 1993. Red River of the North Basin, Minnesota, North Dakota, and South Dakota: Water Resource Bulletin. v. 29, pp. 575-615.

Logperch

Level III

Scientific Name: *Percina caprodes*

General Description: Length up to 7 inches. The logperch is yellow-brown above and lighter on its belly. It has vertical stripes alternating between long and short running the length of the body. There are no scales on the head.



Status: Year-round resident.

Abundance: Rare.

Primary Habitat: Found in the Red River. Usually found in gravel-rocky areas, but can be found in most any habitat type.

Federal Status: No federal status.

Reason for Designation: Few records of this species in the state. North Dakota appears to be on the western edge of its range.



LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Usually found in gravel-rocky areas in medium to large streams, but can be found in most any habitat type. Spawning occurs in riffle habitat of rivers and streams and shallow sand flats in lakes.

Key Areas for Logperch in North Dakota

This species has only been recorded recently in the Red and Pembina rivers. It has also been recorded in the Goose River, but not in the last 40 years.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

Land uses within the basin, most notably agricultural practices have changed the landscape and reduced habitat quality for this species. The draining of wetlands, through ditches diverted to area streams and rivers increases sedimentation and agricultural run-off in the water.

Other Natural or Manmade Factors

The addition of dams to the Red River drainage has changed the flow regime, blocking movement of fish into suitable habitat and fragmenting populations. A decrease in water quality due to a number of land use practices in the Red River basin has contributed to the decline of this species.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- Currently no studies or surveys specifically targeting the logperch are ongoing.

Previous Research and Survey Efforts

- Red River basin streams were surveyed during the 1960s by the University of North Dakota (UND).
- Surveys of several tributaries to the Red River in Minnesota was conducted by the BMNH from 1974-1976.

Logperch

Level III

- In the late 1970s, Red river stream surveys were conducted by the Minnesota Department of Natural Resources, Ecological Services Section (MDNR ECO).
- A study was conducted on the Red River during 1983 and 1984.
- In 1985, the North Dakota Natural Heritage Inventory and the NDGF sampled from 15 sites in the Pembina River watershed.
- Investigations of stream fishes in the Red River basin occurred during 1993 and 1994 as a part of two major studies.
- Several sites throughout the basin have been sampled for fishes using electro-fishing gear by the MDNR, Minnesota Pollution Control Agency (MPCA), North Dakota Department of Health (NDDH), U.S. Environmental Protection Agency (EPA), and the U.S. Geological Survey (USGS). These studies are a part of the USGS National Water Quality Assessment program (Stoner et al. 1993) and the development of an index of biotic integrity for fishes in the basin (Goldstein et al. 1994).

Additional Research and Survey Efforts Needed

- Conduct a review of historic literature and data collection efforts for all fish species of conservation priority.
- Re-examine sites where this species has been recorded.
- Develop a protocol to monitor this species.

MANAGEMENT RECOMMENDATIONS

- Protect rivers, streams, and riparian areas where possible (i.e. easements and/or acquisition).
- Work with partners to ensure Swampbuster provisions are maintained.
- Continue to use the Section 404 program to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with other federal agencies (i.e. FAA and FHWA) not covered by Section 404 or Swampbuster to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with NDSWC to develop minimum in-stream flow recommendations.
- Work with partners to implement easements (i.e. EWP, WRP, and ACOE Sluffing or Flood Control Easements).
- Develop and promote incentive programs to restore riparian areas.
- Work with partners to implement easements (i.e. EWP and WRP).
- Work with partners to implement easements.
- Work with county zoning planning officials to designate areas in need of protective covenants.
- Develop and promote incentive programs to enhance or restore riparian areas.
- Continue to work with ND 319 Task Force in prioritizing projects within impaired watersheds and implementing BMP's.
- Work to modify dam operation regimes.
- Develop and promote incentive programs for adjacent landowners to improve bank stability through land use changes (e.g. RRBWP).
- Promote non-traditional bank stabilization measures (i.e. root wads, willow waddles, vegetative slope).
- Implement intake conditions or recommendations (i.e. screening and velocity requirements).
- Work with the dam owners for potential removal or modification.
- Control noxious weeds through biological and chemical methods.
- Cooperate with Fisheries Division on state aquatic nuisance species plan.
- Survey areas of data gaps. Conduct research/surveys to establish baseline information on SoCP.
- Continue to work with partners in promoting and distributing educational materials related to river, stream and riparian values and good stewardship.

Logperch

Level III

MONITORING PLANS

- Ongoing surveys along with the North Dakota Game and Fish Department's incidental reporting system will be used to monitor this species.
- The North Dakota Department of Health began Index of biotic Integrity (IBI) surveys for all North Dakota watersheds in the summer of 2005. These surveys will documents all species captured.

REFERENCES

- Becker, G.C. 1983. Fishes of Wisconsin. Univ. Wisconsin Press, Madison. 1,052 pp.
- Goldstein, R.M. et al. 1994. Concepts for an Index of Biotic Integrity for Streams of the Red River of the North Basin: Proceedings of the North Dakota Water Quality Symposium, March 30-31, 1994. Fargo, North Dakota, pp. 169-180.
- Koel, Todd Marvin. 1997. Distribution of Fishes in the Red River of the North Basin on Multivariate Environmental Gradients. Ph.D. thesis, North Dakota State University, Fargo, North Dakota. 275 pp.
- Kreil, R.L., and L.F. Ryckman. 1987. A Fisheries Inventory of the Upper Pembina River in North Dakota. *Prairie Naturalist*. 19(2): pp.121-127.
- Page, L.M., and B.M. Burr. 1991. A Field Guide to Freshwater Fishes: North America North of Mexico. Houghton Mifflin Company, Boston, Massachusetts. 432 pp.
- Peterka, John J. and Todd M. Koel. 1996. Distribution and dispersal of fishes in the Red River basin. Report submitted to Interbasin Biota Transfer Studies Program, Water Resources Research Institute, Fargo, ND. Northern Prairie Wildlife Research Center Home Page.
<http://www.npwrc.usgs.gov/resource/distr/others/fishred/fishred.htm> (Version 29AUG97).
- Power, Greg J. and F. Ryckman. 1998. Status of North Dakota's Fishes. ND Game and Fish Dept., Div. Rpt. 27, 20 pp.
- Stoner et al. 1993. Red River of the North Basin, Minnesota, North Dakota, and South Dakota: Water Resource Bulletin. v. 29, pp. 575-615.

River Darter

Level III

Scientific Name: *Percina shumardi*

General Description: 3 inches in length. Olive on the top with dark bars along the back. A small black spot at the front and large black dot at the rear of the dorsal fin distinguish this from other common darters.

Status: Year-round resident if present.

Abundance: Believed extirpated.

Primary Habitat: Found in rocky riffles of streams. Adults are normally found deeper than young.

Federal Status: No federal status.

Reason for Designation: Believed to be extirpated from North Dakota waters. Listed as a species of concern by the Dakota Chapter of the American Fisheries Society.



Historic Distribution

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Found in rocky riffles of all size streams. Young are found in shallow, swift riffles and adults are found in deeper, slower moving water.

Key Areas for River Darter in North Dakota

Believed to be extirpated, the river darter was once present in the Red and Sheyenne rivers. No specific key areas have been identified for this species.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

River darters are habitat specialists and do not tolerate changes to the system. Land use in the area has changed the hydrology of the rivers from their pre-settlement conditions.

Other Natural or Manmade Factors

The addition of dams to the Red River drainage has changed the flow regime and also blocked movement of fish, fragmenting populations. A decrease in water quality due to poor land use practices in the Red River basin may have contributed to the decline of this species.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- Currently there are no ongoing studies or surveys specifically targeting the river darter.

Previous Research and Survey Efforts

- Red River basin streams were surveyed during the 1960s by the University of North Dakota (UND).
- Surveys of several tributaries to the Red River in Minnesota was conducted by the BMNH from 1974-1976.

River Darter

Level III

- In the late 1970s, Red River basin stream surveys were conducted by the Minnesota Department of Natural Resources, Ecological Services Section (MDNR ECO).
- Surveys were conducted on the Red River during 1983 and 1984.
- Investigations of stream fishes in the Red River basin occurred during 1993 and 1994 as a part of two major studies.
- Several sites throughout the basin have been sampled for fishes using electrofishing gear by the MDNR, Minnesota Pollution Control Agency (MPCA), North Dakota Department of Health (NDDH), U.S. Environmental Protection Agency (EPA), and the U.S. Geological Survey (USGS). These studies are a part of the USGS National Water Quality Assessment program (Stoner et al. 1993) and the development of an index of biotic integrity for fishes in the basin (Goldstein et al. 1994).

Additional Research and Survey Efforts Needed

- Conduct a review of historic literature and data collection efforts for all fish species of conservation priority.
- Re-examine sites where this species has been recorded to determine if it is found in ND waters.
- Develop a protocol to monitor this species.

MANAGEMENT RECOMMENDATIONS

- Protect rivers, streams, and riparian areas where possible (i.e. easements and/or acquisition).
- Work with partners to ensure Swampbuster provisions are maintained.
- Continue to use the Section 404 program to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with other federal agencies (i.e. FAA and FHWA) not covered by Section 404 or Swampbuster to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with NDSWC to develop minimum in-stream flow recommendations.
- Work with partners to implement easements (i.e. EWP, WRP, and ACOE Sluffing or Flood Control Easements).
- Develop and promote incentive programs to restore riparian areas.
- Work with partners to implement easements (i.e. EWP and WRP).
- Work with partners to implement easements.
- Work with county zoning planning officials to designate areas in need of protective covenants.
- Develop and promote incentive programs to enhance or restore riparian areas.
- Continue to work with ND 319 Task Force in prioritizing projects within impaired watersheds and implementing BMP's.
- Work to modify dam operation regimes.
- Develop and promote incentive programs for adjacent landowners to improve bank stability through land use changes (e.g. RRBPR).
- Promote non-traditional bank stabilization measures (i.e. root wads, willow waddles, vegetative slope).
- Implement intake conditions or recommendations (i.e. screening and velocity requirements).
- Work with the dam owners for potential removal or modification.
- Control noxious weeds through biological and chemical methods.
- Cooperate with Fisheries Division on state aquatic nuisance species plan.
- Survey areas of data gaps. Conduct research/surveys to establish baseline information on SoCP.
- Continue to work with partners in promoting and distributing educational materials related to river, stream and riparian values and good stewardship.

MONITORING PLANS

- No monitoring plan has been identified for this species.
- Ongoing surveys along with the North Dakota Game and Fish Department's incidental reporting system could be used to monitor this species.

River Darter

Level III

- The North Dakota Department of Health began Index of Biotic Integrity (IBI) surveys in the summer of 2005 for all of North Dakota's watersheds. This will document all species encountered.

REFERENCES

Becker, G.C. 1983. Fishes of Wisconsin. Univ. Wisconsin Press, Madison. 1,052 pp.

Goldstein, R.M. et al. 1994. Concepts for an Index of Biotic Integrity for Streams of the Red River of the North Basin: Proceedings of the North Dakota Water Quality Symposium, March 30-31, 1994. Fargo, North Dakota, pp. 169-180.

Koel, Todd Marvin. 1997. Distribution of fishes in the Red River of the North Basin on Multivariate environmental gradients. Ph.D. thesis, North Dakota State University, Fargo, North Dakota. 275 pp.

Page, L.M., and B.M. Burr. 1991. A Field Guide to Freshwater Fishes: North America North of Mexico. Houghton Mifflin Company, Boston, Massachusetts. 432 pp.

Peterka, John J. and Todd M. Koel. 1996. Distribution and Dispersal of Fishes in the Red River Basin. Report submitted to Interbasin Biota Transfer Studies Program, Water Resources Research Institute, Fargo, ND. Northern Prairie Wildlife Research Center Home Page.
<http://www.npwrc.usgs.gov/resource/distr/others/fishred/fishred.htm> (Version 29AUG97).

Power, Greg J. and F. Ryckman. 1998. Status of North Dakota's Fishes. ND Game and Fish Dept., Div. Rpt. 27, 20 pp.

Stoner et al. 1993. Red River of the North Basin, Minnesota, North Dakota, and South Dakota: Water Resource Bulletin. v. 29, pp. 575-615.

This page intentionally left blank.